CLIMATE AID: A CONCEPTUAL AND EMPIRICAL INVESTIGATION

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by
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"In three words I can sum up everything I've learned about life: It goes on"

- Robert Frost

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Chapter 1

Introduction

1.1 Introducing Climate Change and Aid

Anthropogenic climate change is possibly one of the most serious threats the world is facing today. From rising sea levels, to increasing frequency of extreme weather events, the perils of climate change pose a fundamental danger to all life on earth. Dealing with climate change requires a two-pronged approach. Firstly, we need to mitigate our greenhouse gas (GHG) emissions that are responsible for climate change (mitigation). Secondly, climate change is creating problems that require adapting to its anticipated negative effects or taking action to minimize the damages caused by it (adaptation).

Unfortunately, the brunt of climate change is borne largely by developing countries. They face what is often referred to as a *double injustice* (Betzold & Weiler, 2017). Despite being the least responsible for causing climate change, they are not only disproportionately affected by the unfavorable effects of climate change but also have much fewer resources to deal with it (Gough, 2011). Keeping in view this double injustice, developed countries are expected to support developing countries to mitigate and adapt to climate change.

Among others, one of the most important forms of support developing countries need is climate finance. Climate finance is basically financial flows aimed at helping developing countries reduce their GHG emissions (via mitigation finance) and adapt (via adaptation finance) to climate change.

That developed countries shall help developing countries with climate finance was already agreed to in the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. However, till the Conference of the Parties (COP 15) held in Copenhagen in 2009, no concrete amount of financial resources that was to be transferred to the developing countries was settled upon. After years of negotiations, finally in Copenhagen, developed countries pledged to provide climate finance to the amount of 10 billion US$ per year from 2010-2012 with the promise to increase it to 100 billion US$ starting in 2020 (UNFCCC 2009, para. 8; UNFCCC 2010: Decision 1/CP.16, para. 98). These commitments were further reaffirmed in the Cancun COP in 2010 and more recently, in the Paris Agreement of 2015. The Paris Agreement states that developed countries 'need to take the lead in mobilizing climate finance from a wide variety of sources' (UNFCCC, 2015 Art. 9.3). The text of the Paris Agreement gives developed countries significant leeway over how much they will contribute out of their own budgets and how much they will leverage from private sources. Currently, although the levels of climate finance provision is increasing over time, there is a considerable gap between the amount of financing required and the amount available to the developing countries (Betzold & Weiler, 2016). This means that there will likely never be enough to cover all the costs of financing the responses to climate change and the available resources need to be used efficiently.

Most of the climate finance comes from developed country governments' Official Development Assistance (ODA), i.e., development aid budgets, and is hence called "climate aid". Furthermore, climate aid is the only relatively undisputed source of data available on climate finance. Nonetheless, climate aid is riddled with problems that need a thorough conceptual and empirical reconsideration, which is the focus of this thesis.

These problems are briefly discussed in the next section before exploring the research gap and research questions addressed.

1.2 Rethinking Climate Aid

There are several issues revolving climate aid that need to be dealt with in a comprehensive manner. Some of them have already been debated heavily. First and foremost, climate aid is supposed to be *new and additional* as established in the negotiations (UNFCCC, 2009). Although additionality has never been properly defined, according to Ballesteros & Moncel (2010), it implies that financial flows addressing the objective of climate change should not replace or substitute funding for other important development objectives. To what extent climate aid is additional to existing development aid commitments needs further scrutiny.

Second, climate finance is fundamentally different from *aid* although at present it is subsumed within that category. While the term *development aid* suggests a charitable support of developing countries, *climate finance* is considered as compensation for the damages caused by developed countries, i.e., as payments developing countries can rightfully claim under the normative principle of *polluters pay*. This issue has already given rise to heated debates in the context of the negotiations within the UNFCCC.

Third and not considered so far within this debate, funding for climate change mitigation addresses a global public good. Mitigation is a global public good since its benefits are not contained locally, but are global in nature (Kaul, 2014; Kaul, et al., 1999). This means that developing countries that receive such *aid* do not get any exclusive benefits. Can we talk of *aid* when there are no specific benefits for the country that receives it?

That mitigation aid addresses a global public good has far-reaching implications for how it should be allocated. Those countries most vulnerable to climate change and thus, most in need of mitigation are generally not served best by implementing mitigation activities there. They often do not have high levels of GHG emissions and consequently, low emission reduction potentials. From a public choice perspective, mitigation aid should be allocated to places with maximum emission reduction potential (on the basis of cost-effectiveness), which often happen to be emerging economies. This goes against the traditional logic of aid allocation according to which aid should always go to those countries most in need. Things are different with respect to adaptation. Adaptation aid usually addresses private or a local public good where the benefits are exclusive to the beneficiary of the aid. Adaptation aid and other development aid should, therefore, be allocated to needy countries, which are vulnerable to the effects of climate change.

This thesis will investigate in more detail to what extent funding related to climate change mitigation and adaptation should be used like aid and is used like aid in practice. By doing so, this thesis will not only uncover conceptual inconsistencies, but also inefficient practices and rather puzzling strategic choices of the use of climate finance by donor countries.

1.3 Methodological Remarks

The thesis uses a mixed methods approach by combining qualitative and quantitative methods. Historically, a gulf exists between qualitative and quantitative perspectives with each adhering to different standards (Layder, 1988). Both of these methods ultimately have the same objective, irrespective of the fact that each has diverse strengths as well as logic (Maxwell, 2004). The main difference between the two types of methodologies comes from the way they deal with data. While a qualitative researcher looks for patterns or

relationships between unspecified concepts in a fairly unrestricted way, quantitative researchers adopt a narrower view by looking at a specific set of variables (Brannen, 2017). This means that quantitative research is limited to what can be measured while qualitative research aims to provide an in-depth and descriptive account of the social aspects of the world (Winter, 2000).

Chapter 3 attempts to understand how donors' behave in their allocation of climate aid and what factors influence their behavior. Here, the subject of enquiry was the human being, i.e. the donor himself/herself. Adopting a qualitative approach, through the use of semi-structured interviews was necessary because one cannot know human behavior in the absence of understanding the structure in which the subjects interpret their 'thoughts, feelings, and actions' (Atieno, 2009, p. 14). Chapter 3 is therefore, rather exploratory. The rest of the chapters, i.e. 4-6 explore more concrete hypotheses based on open questions raised in chapter 3 using large panel datasets. The next section presents the plan of the dissertation where each chapter is summarized.

1.4 Plan of the Dissertation

Chapter 2 sets the stage by providing some empirical numbers about the relevance of climate aid. It further provides the conceptual backbone of this thesis by clarifying the concept of "climate aid" and deepening the understanding of the problems associated with the current use of this term. This will explain, in particular, why the allocation criteria for mitigation aid addressing a global public good should be clearly distinct from the allocation criteria for adaptation or other aid. Otherwise, there is a high risk that the former is spent in a very inefficient way.

Chapter 3 focuses on the empirical question of whether donors are aware of the fact that the allocation criteria of mitigation aid should be different. If yes, do they face any political barriers to actually apply such a different set of criteria? The chapter identifies such barriers and reflects on how they reduce donors' allocation efficiency. The analysis relies on expert interviews and secondary sources of data. The findings indicate that sometimes despite adopting concrete criteria for allocating mitigation aid, only a few donors follow a cost-effective strategy. They also face several impediments in their quest for efficient allocation such as conflicts between different ministries, their own strategic priorities, and their cherished image as poverty- and need-oriented donors, as well as related public expectations.

Chapter 4-5 presents a quantitative approach to understand climate aid allocation. In the previous chapter, individual donors could not be identified owing to confidentiality reasons. In a quantitative approach there are no such restrictions. In addition, by using quantitative data the statements of donors examined in the previous chapter can be compared to the empirical reality, thus providing an idea of the extent of potential inefficiencies in aid allocation. The quantitative analysis proceeds in two steps – first with aggregated donors and then with individual donors. To do so, panel data are used – initially with variation only over the dimensions recipient and year, later adding variation across different donors as a third dimension.

In chapter 4, the determinants of climate aid allocation for both mitigation and adaptation aid are analyzed to understand whether their drivers are different. In other words, this analysis focuses on whether mitigation aid (which addresses a global public good) is driven by efficiency of being able to produce maximum emission reductions while adaptation aid is driven by the neediness/climate related vulnerability of the recipient.

One important issue is, since cost-effective emission reduction opportunities are mostly available in middle-income countries, the current aid allocation literature will misinterpret the efficiency of donors and claim that they are pursuing selfish interests (since such middle-income countries are also important to donors from an economic and geopolitical point of view). Therefore, it is essential to control for mitigation potential to prevent such a misinterpretation. The findings of this analysis show that donors, overall, have not yet implemented the efficiency aspect in their aid allocation.

As long as donors are aggregated in the analysis, it is not possible to distinguish between them. In fact, the average may hide important differences between donors. Therefore, chapter 5 presents a more fine-grained analysis of individual donors in a three-dimensional panel data with donor-recipient-year dimensions. Here, the focus is only on mitigation aid since in this case, the imperative is to go beyond the usually assumed objectives of development aid allocation. Using seemingly unrelated regressions, differences between each donor are examined to reveal insights into which donor is efficient and which donor, careless in their allocation. As mentioned above, often donors' efficiency will be misinterpreted in the traditional framework of the aid allocation literature unless controls for mitigation efficiency are included. This chapter will investigate and rank the different donors on the basis of how misinterpreted they are when they are actually efficient.

Chapter 6 explores the strategic use of climate aid within the international negotiations. For development aid as a whole, its use as a carrot (or stick) with respect to voting in the context of the United Nations General Assembly (UNGA) and the United Nations Security Council (UNSC) has been widely demonstrated. Is climate aid used in a similar way within the

UNFCCC negotiations? Again, one would expect that the conceptual difference between mitigation aid, which addresses a global public good, and adaptation aid, which addresses a local public good, might be relevant. The former may be less suitable as a reward since each recipient will only enjoy a small part of the benefits. Using the three-dimensional panel data from the previous chapter, augmented by data on statements within the negotiations, yields several unexpected results. Mitigation aid is used as much as adaptation aid for strategic purposes. In addition, while friendly statements are rewarded as expected, climate aid is also used to contain opposition. Surprisingly, donors thereby behave in a way that appears very shortsighted and inconsistent with a long-term equilibrium strategy. Chapter 7 concludes and discusses possibilities for future research.

Some of the work in this thesis builds on joint papers with Paula Castro and Katharina Michaelowa (Bagchi et al., 2016; Bagchi et al., 2017). This is true notably for Chapters 4-6, and the general conceptual discussion of mitigation aid as a global public good. In this thesis, the work is restructured around the central topic of climate aid and additional empirical evidence.

Chapter 2

Role and Relevance of Climate Aid

This chapter starts with a brief overview of climate finance and discusses its architecture. It also presents the various sources of climate finance and some descriptive statistics. Then, it goes on to discuss the conceptual issues surrounding climate aid in more detail.

2.1 Introduction to Climate Finance

The scientific community is unequivocal in their claim that climate change is happening, and anthropogenic activities are largely responsible for it. Over the past years, there has been a substantial rise in the atmospheric concentration of CO_2 and other greenhouse gases (GHGs) leading to changes in the earth's temperature. Projections of recent emission trends, assuming a business-as-usual scenario indicate that potential temperature increases between 1.1 – 6.3 $^\circ$C will occur by the end of the 21st century (IPCC, 2014). Addressing climate change through the reduction of anthropogenic GHGs (mitigation) is one of the most pressing challenges of our time. However, mitigation alone is not a sufficient response to climate change anymore since the adverse impacts of climate change are already visible in different parts of the world. This means that we also need to adapt to the effects of climate change (adaptation). Some such effects of climate change are sea level rise, melting of glaciers, extreme weather events, changes in precipitation patterns, etc. (NASA, 2018).

Irrespective of the fact that climate change is an intrinsically global issue, its impacts will vary in both, magnitude and rate of change in different continents, countries, and regions (US EPA, 2018). Climate change will especially impact developing countries in a cataclysmic way. A temperature increase by 1°C in a country with an average annual temperature of 25°C like Bangladesh or Haiti, will lead to a reduction of per capita output by up to 1.5% (UNFCCC, 2017b). Climate-related disasters adversely affect poverty, with more than 325 million poor people across 49 most affected countries becoming more vulnerable by 2030 (Shepherd et al., 2013). Moreover, significant proportions of the population in developing countries (especially low-income ones) are often unable to access adaptation measures such as air conditioning or disaster insurance, which makes them especially vulnerable to climate change (IPCC, 2014). Adaptation costs for developing countries alone could be $70–$100 billion per year between 2010 and 2050 (ibid: 2014). Lack of resources to cope with climate change implies that developing countries need financial support from the developed countries.

Despite the existence of various definitions of climate finance, no official definition of climate finance has been agreed upon by all relevant stakeholders (Buchner et al., 2011, p.1; Haites, 2011; Stadelmann, et al., 2011). Very broadly, however, the term *climate finance* refers to financial resources mobilized to help developing countries mitigate GHGs and adapt to the impacts of climate change (Nakhooda et al., 2014, p. 1). It includes both international public climate finance (bi and multilateral aid, other official flows, etc.) and private flows (carbon markets, FDI, etc.) (Buchner et al., 2011).

Debates on climate finance have been controversial since the beginning of the negotiations under the United Nations Framework Convention on

Climate Change (UNFCCC) in 1992. The UNFCCC regime has emphasized on the necessity that climate finance flows be *new and additional* to existing international and private financial flows, as well as development aid (Tanner and Phathanothai, 2014) but what exactly constituted new and additional was never clearly defined. Finally, at the fifteenth Conference of the Parties (COP 15), industrialized countries pledged to provide 100 billion US$ to developing countries starting in 2020 (UNFCCC 2009, para. 8). To prevent the weakening of industrialized countries' financial commitments, several developing countries demanded that there be strict requirements for measurement, reporting and verification of financial flows (ibid: 2017). Consequently, negotiations on how to concretely define climate finance, what amount is needed and who is responsible to provide how much also became important (Skovgaard, 2017). The next section presents an overview of the climate finance architecture before discussing the conceptual foundation of this thesis.

2.2 Climate Finance Architecture

Over the years, the climate finance architecture has become increasingly convoluted owing to the proliferation of various national, international and regional channels involved in delivering climate finance. Such a complex system poses significant problems. Firstly, it makes it difficult for the recipient countries to navigate the various channels to access financial flows (Thwaites & Amerasinghe, 2017). Secondly, it creates problems relating to monitoring, verifying and reporting such financial flows (Nakhooda et al., 2014). Figure 2-1 offers a simplified presentation of the climate finance architecture.

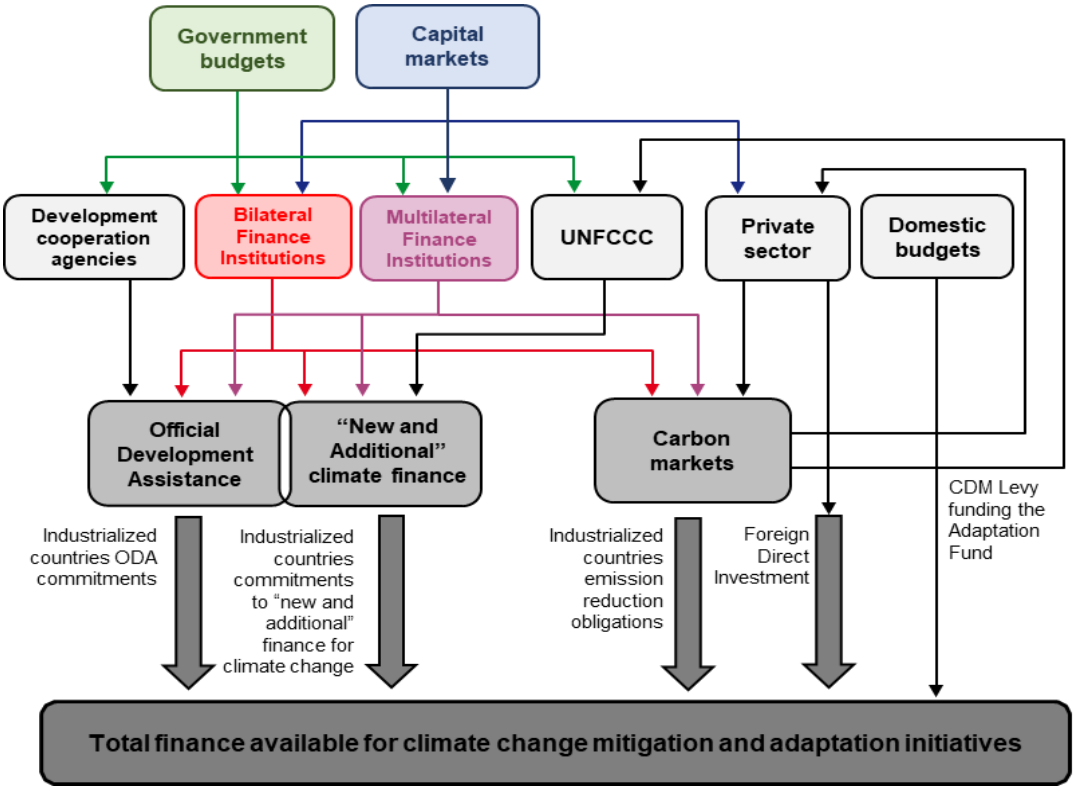

Figure 2-1 Climate finance architecture (adapted from Atteridge et al., 2009).

Figure 2-1 shows the existing multilateral, bilateral and private channels fed by government budgets and capital markets. The different private, bi- and multilateral organizations contribute to climate change mitigation and adaptation activities, complemented by direct contributions of industrialized countries' governments. The broadest definition of climate finance includes all these funds, i.e. funding through climate-related development aid (Official Development Assistance, ODA), and through carbon markets. However, both of these existed already when developed countries committed to *new and additional* funding at Copenhagen. Hence, Atteridge et al. (2009) introduce a new box in the figure to demonstrate this required additionality. The overlap with ODA shows that in practice, the new funding also qualifies as ODA. This raises the crucial question: Does the overlap suggest that the newly promised money can be (fully or partially) part of

ODA? While ODA is supposed to address development related issues in poor countries, such as poverty, healthcare, etc., climate finance is supposed to cater exclusively to climate-change related issues, i.e. mitigation and adaptation. Since most of the current climate finance from developed countries is incorporated within ODA there are now problems relating to understanding whether these flows are just traditional ODA or "new and additional climate finance" (Atteridge et al., 2009).

Generally, given the diverse interpretations of the climate finance architecture, there are different ways in which the figure could have been represented. For instance, the figure 2-1 seems to depict that ODA is a small source of climate finance within this architecture, but reality is otherwise. ODA (and not "new and additional climate finance") is currently the main source of public climate finance and deserves a much larger representation in the figure above, which was perhaps not envisioned by the authors. There may be additional private funding contributing to "new and additional" climate finance although this is not foreseen in the illustration. Moreover, there could have been arrows from the capital markets to government budgets, indicating that capital markets can feed into the government's budgets. The figure also ignores the evolution of various regional and national funds that have emerged to deal with climate change.

2.3 Public Sources of Climate Finance

Government budgets of developed countries (consisting of revenues from taxes, levies or capital market) are one of the main sources of international climate finance. They are also the central source of ODA or 'climate aid', which can be provided to developing countries as grants and concessional loans (Buchner et al., 2017). Such climate aid can be further subdivided into

mitigation aid (used to reduce GHG emissions) and adaptation aid (used to adapt to the adverse effects of climate change).

The sources of climate aid can be both, multilateral or bilateral. To give an idea about the magnitude of flows of climate aid from these two sources, figure 2-2 shows the shares of multilateral and bilateral climate aid for mitigation and adaptation. Significant levels of climate aid from both multilateral and bilateral sources address climate change mitigation, while comparatively smaller percentages are allocated to adaptation. Some aid activities can also address adaptation and mitigation at the same time. Their effects can either be complementary (e.g., when flood resistant and hence, safer infrastructure is at the same time more energy efficient) or conflicting (e.g., when adaptation focuses on cooling for perishable food items that, at the same time, requires more energy). These types of cross-cutting activities are financed more by bilateral sources (21%) in comparison to multilateral sources (3%).

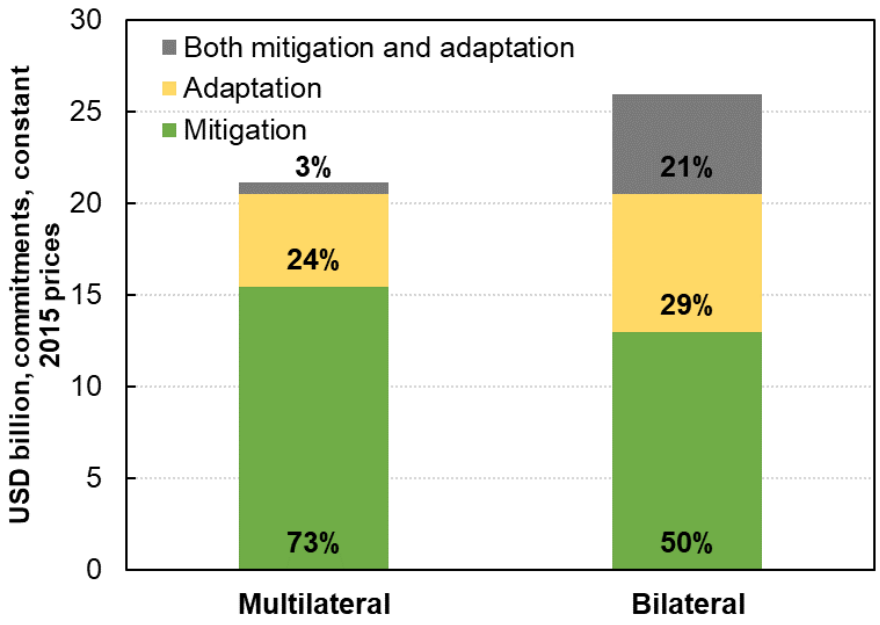

Figure 2-2 Multilateral and bilateral climate aid commitments for 2014-15, Source: (OECD, 2016).

Multilateral sources of finance include flows from multilateral development banks (MDBs), special international agencies created by these MDBs in collaboration with various national governments, and multilateral climate/environment funds. For quite some time now, MDBs have integrated climate change related considerations in their lending activities and administer various climate finance initiatives (Nakhooda & Watson, 2014). Examples of such MDBs active in climate change financing include the World Bank, African Development Bank (AfDB), Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD) and the Inter-American Development Bank (IADB).

In addition to flows from the MDBs, a financial mechanism of the UNFCCC was set up to provide financial resources to developing countries and is served by international entities, as stipulated by Article 11 of the Convention (UNFCCC, 2017a). One such entity is the Global Environment Facility (GEF). The GEF has been serving as an operating entity of the financial mechanism since the Convention's entry into force in 1994 (UNFCCC, 2018). Although the fund caters to various areas of environmental funding, it is active in financing for climate change mitigation and adaptation. The Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF), both managed by the GEF address mainly adaptation development plans and implementation (Nakhooda & Watson, 2014). The Green Climate Fund (GCF), which became operational in 2015, has also been instituted to serve as the financial mechanism of the UNFCCC along with the GEF. It is expected to become one of the primary channels of climate finance (Schalatek et al., 2015). Another fund active in adaptation is the Adaptation Fund. Despite being formally associated with the UNFCCC, it is financed through a 2% levy on the sale of certified emission reduction

credits from the Clean Development Mechanism of the Kyoto Protocol, i.e., by a tax on private business related to emission reductions. Only after the collapse of the carbon markets due to the economic crises in 2008 when carbon prices fell to zero, the Adaptation Fund has begun to rely on voluntary contributions from developed countries (Trujillo & Nakhooda, 2013).

Outside of the financial mechanism of the UNFCCC, there are also special climate change funds, which have been set up in partnership with national governments and MDBs. Out of these funds, the Climate Investment Funds (CIFs) are the most important ones. The World Bank has established and administers these funds in coordination with AfDB, ADB, EBRD and IADB since 2008 (Amerasinghe et al., 2017). The CIFs are further subdivided into the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). The SCF incorporates three other funds: The Pilot Program for Climate Resilience (PPCR), the Forest Investment Program (FIP) and the Scaling-Up Renewable Energy in Low Income Countries Program (SREP) (Amerasinghe et al., 2017). Figure 2-3 depicts the discussions about these funds operating within and outside of the UNFCCC in a distinct manner.

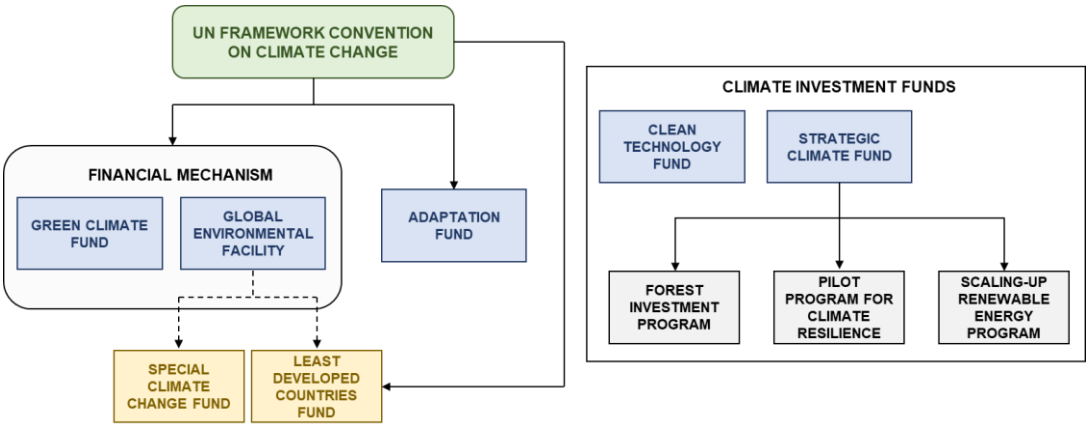

Figure 2-3 Climate funds within and outside the UNFCCC (Adapted from Amerasinghe, et al., 2016).

Bilateral climate aid, as administered by existing development aid agencies, contributes to a large share of public money addressing climate change (Nakhooda et al., 2014, p. 2). It can be further subdivided into 'mitigation aid' and 'adaptation aid' differentiated through the 'Rio markers'. The Rio markers were introduced in 1998 for mitigation aid, and in 2010 for adaptation aid. However, this does not mean that ODA did not address climate change related concerns before the introduction of the Rio Markers. According to Michaelowa (2012, p. 255) ODA supporting renewable energy and energy efficiency projects (i.e. addressing GHG mitigation) already existing in the early 1950s. In the past few years, these flows of bilateral climate aid have increased both in absolute terms and as a proportion of total bilateral ODA (Buchner et al., 2017). Figure 2-4 shows the share of bilateral climate aid as a percentage of total ODA.

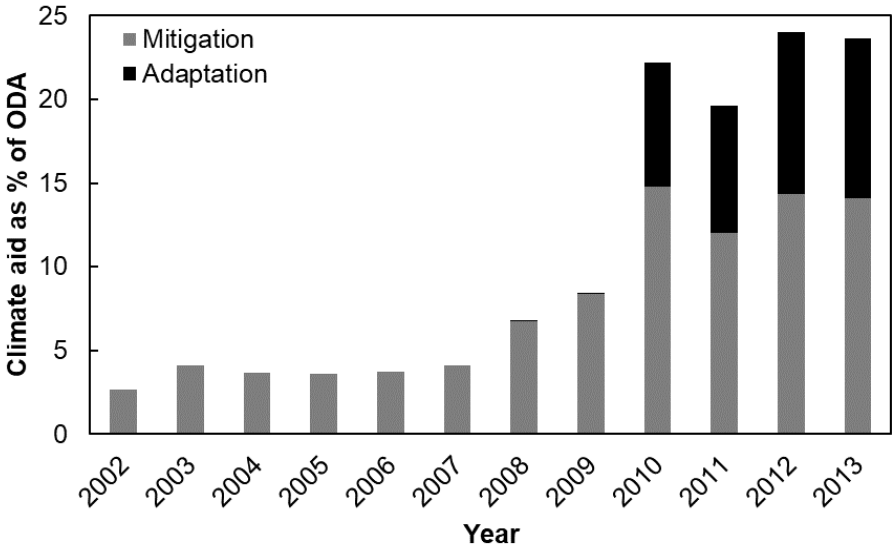

Figure 2-4 Share of climate aid within total ODA (commitment data, in percent and constant 2015 prices), Source: Author's own calculation based data from OECD (2018).

The figure only includes data for climate aid flows that have been assigned the Rio marker. Despite the Rio marker being introduced in 1998,

the data available from the OECD Creditor Reporting System (CRS) for mitigation aid on the basis of this marker only starts from 2002 and for adaptation aid, from 2010. It can be clearly observed how climate aid as a percentage of ODA has grown substantially over time while adaptation aid remained comparatively small.

This thesis will use climate aid as a general proxy for overall climate finance. This is because there is relatively undisputed data for climate aid and there are various associated conceptual problems relating to it. It will focus on the conceptual issues relating to climate aid, providing insights and empirical evidence relating to its efficient allocation as well as strategic use. At the outset, it must be clarified that by using the term *aid* and using the data on *aid* this thesis does not endorse the fact that the normative differentiation between aid and climate finance, as discussed in detail in the next section, should be disregarded. In fact, despite using the term *aid*, this study aims to strengthen the understanding that it may not make sense to consider it as aid conceptually – at least as far as mitigation finance is concerned. However, despite the current debates surrounding the issue of ODA and climate finance, the reality is that substantial climate finance flows are financed through ODA.

2.4 Conceptual Issues Surrounding Climate Aid

Including climate aid as ODA is a problematic issue. Firstly, climate aid and ODA are normatively different. Secondly, counting climate aid as ODA creates problems relating to additionality of such flows. And thirdly, within climate aid, mitigation aid addresses a global public good, which is at odds with the way we usually conceive aid, namely as the support of a specific partner country. While all three problems will be discussed below, this thesis will focus mostly on the third point – which is its main conceptual contribution to the overall climate finance debate. While the first two

problems have been comprehensively examined; the third one has not received any attention so far.

2.4.1 Charity or Compensation?

The existing climate finance architecture has transpired against the backdrop of long-lasting debates between developed and developing countries over the definition of climate finance and its relationship to ODA. The injustice of climate change, as repeatedly referred to by the developing countries in the UNFCCC negotiations is that the countries least responsible for climate change suffer more than those actually responsible for it. This raises the question of why they should have to pay for the damages occurring on account of climate change. Developing countries argue that climate finance should be separate from ODA based on developed countries' historical responsibility for climate change (Klein, 2010). That is, developed countries should pay the developing countries compensation on the basis of the normative principle of polluters pay. The developing countries would also prefer that climate finance be "delivered in a way that reflects developing countries' entitlement to funds" (Pickering et al., 2015, p. 151). As a result, they would like to see all climate finance being dispensed through multilateral channels "under the UNFCCC" – meaning the climate funds like GEF, AF and GCF (ibid: 2015). This was a way they tried to ensure that the funds for climate change are not assimilated within the existing ODA flows.

ODA allocated to developing countries does not have the same motivation as climate finance. The former operates principally on the responsibility of the wealthy countries to help poor ones address their needs, such as the lack of resources, health or education, limited access to markets, poor infrastructure and the like (Roberts, 2009). In contrast, the latter addresses need relating to climate change. Another important distinction

between the two is that the ODA is usually financed by donor countries government budgets whereas climate finance can come from a variety of sources, including private ones (Bird & Glennie, 2011). Developed countries, however, emphasize that there are existing complementarities between addressing climate change and promoting development, which is why they finance mitigation and adaptation through ODA. Besides, they consider climate aid to be a bargain between developed and developing countries to help the latter enhance their mitigation efforts (Betzold and Weiler, 2017).

2.4.2 New and Additional?

Despite several internationally negotiated documents such as the Copenhagen Accord (2009) stating that climate finance should be *new and additional*, it is still not clear what this means. This is problematic since each country has distinct interpretations of the term new and additional' (Brown et al., 2010; Stadelmann et al., 2010). There is some basic agreement about the general meaning of the term *new and additional,* but it has not been concretely defined yet. The general interpretation is that the term *new* may be understood as that the current climate finance flows have increased in comparison to past and existing climate related funds (Ballesteros & Moncel, 2010). To ensure that climate aid is *additional* to existing aid commitments and that development aid is not compromised; climate aid needs to generate revenues 'over and above existing and committed volumes of ODA' (Parker et al., 2009, p. 27). However, determining whether climate finance is new and additional is inherently difficult since there is no counterfactual: what would donors have given to countries as ODA under business-as-usual (BAU) in the absence of climate finance? (Ballesteros & Moncel, 2010). Countries negotiating at the UNFCCC discuss a wide range of options for defining additionality. Before agreeing on what constitutes as additional finance, countries need to settle upon a common baseline against which additionality

could be assessed. Figure 2-5 shows what options exist for establishing baselines against which increases in climate finance can be assessed.

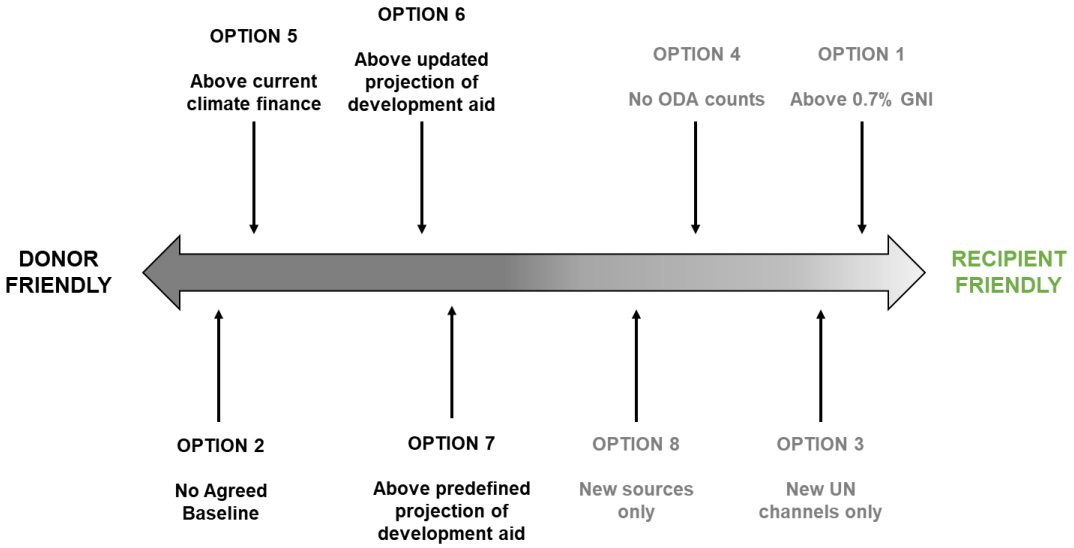

Figure 2-5 Options for establishing a baseline to assess climate finance additionality (Adapted from Weikmans et al., 2016, p. 27).

Figure 2-5 displays some of the existing options out of which some are more preferable to the developing country recipients (those closer to the right of the big arrow in the middle) while others offer more discretion to the donors (those closer towards the left of the big arrow in the middle). For instance, the most preferred option to developing countries is that climate finance be above 0.7% of the donor's GNI. This option is based on the understanding that donors in the past had accepted the target to contribute 0.7% of their GNI as ODA, first mentioned in the Report of the Commission International Development in 1968 (Pearson, 1969). However, during that time developing countries' needs relating to climate change were not yet recognized and therefore, this target did not acknowledge the additional finance needed to deal with climate change (Brown et al., 2010). Based on this argument, developing countries demand that climate finance be over and above the 0.7% of GNI targets that donors have committed to as ODA. Option 8 in the figure reflects developing countries' preference that climate

finance be contributed through new sources only, while option 4 is that ODA should not be contributing to climate finance. Options to the left are vague and often preferred by donor countries. Lack of an agreed baseline as shown in option 2, for instance, will perpetuate this absence of clarity on what constitutes as *new and additional*.

Each of the options presented in the table above come with a range of advantages and disadvantages, discussing which in detail is outside the scope of this thesis. However, before concluding, seen from a normative perspective, it is important to not only ensure that countries agree on a common baseline to define *new and additional* financial flows, but also that the agreement is fair to the developing countries' rights to compensation.

2.4.3 Local to Global?

Climate aid addresses both local and global aspects of climate change via adaptation and mitigation aid, respectively. Reducing climate change by mitigating GHG emissions is a global public good while adaptation to its effects is more of a private/local/regional public good. Discussing the nature of these different types of goods addressed with the same instrument – climate aid, is important because ultimately this consideration will have an impact on the way it is allocated.

By definition, public goods are characterized by two properties: (1) *Non-rivalry*, which means different individuals can consume the good without diminishing its value for any one of them, (2) *Non-excludability*, which implies that it is impossible to exclude others from enjoying the good. When these two properties hold, and the externalities accrue only locally or within national boundaries, we speak of local or national public goods; when the externalities cross national boundaries we consider such goods to be

transnational public goods; and when the externalities are of global relevance, these goods are known as global public goods. Examples of global public goods (or similarly, global public bads) include environmental commons, containment of communicable diseases, international security, etc. Whenever we have non-excludability across the borders of individual countries recording the benefits only for the country in which the good is produced is misleading. In fact, a neighboring country or countries located in other regions may benefit even more.

Effective mitigation of climate change is a public good that is truly global in nature. A given amount of emission reductions will have the same effect on, say, agricultural production in Uganda, no matter where in the world the mitigation takes place. It even can take place in countries like Australia or Switzerland instead of developing countries, yielding the same results (Michaelowa & Michaelowa, 2012). It will still benefit climate vulnerable countries such as Bangladesh or Uganda even if mitigation of GHGs is not taking place within its borders. Different countries benefit to different extents, depending on their vulnerability, which is in turn related to topographical (e.g., the elevation above sea level) as well as economic characteristics (e.g., dependency on agricultural production). But these benefits do not depend on where the actual mitigation takes place (Bagchi et al., 2016). Yet, taking location into account is important to efficiently produce the global public good of mitigation - this is because the volume of mitigation of GHGs that can be achieved at a given cost varies substantially between localities. An efficient donor should, hence, pick a location that maximizes the amount of emission reductions at given cost. Only in rare cases this locality will correspond to the one that will also reap the greatest benefits. As a consequence, efficient donors should not be judged by whether the aid flows to

those recipients who are in greatest need but by whether they allocate aid to the places where maximum emissions can be reduced at a given cost.

Efficiency in terms of climate change mitigation is negatively, rather than positively correlated to poverty in developing countries. Very poor countries usually have few emissions as they do not have much industry or emission-intensive consumption patterns. Hence, there are little opportunities for large-scale reductions. In fact, the greatest potential for relatively low-cost emission reductions lies in emerging economies. According to Michaelowa & Michaelowa (2009) there are two main reasons for this: increases in industrialization in emerging economies imply an increase in wages, with a rapidly growing middle class which moves to cities and adopts emission intensive lifestyles. In addition, there are large infrastructure development projects, and transportation in private cars becomes an issue. However, at the same time, industrial production and energy provision are still not very efficient (see Michaelowa & Michaelowa 2009 for a more detailed discussion of such emissions paths). This provides ample opportunities for cost-effective emission reduction projects. Based on these considerations, efficiency oriented donors should indeed prefer to direct mitigation aid to, for example, China, rather than to Bangladesh, because the opportunities for efficient emissions reductions are much greater in the former (see Jayaraman & Kanbur, 1999, p. 429). For a given volume of aid, the investment in China will lead to higher emission reductions and hence, eventually, to greater benefits for Bangladesh – one of the countries most vulnerable to climate change (Bagchi et al., 2016). It should be noted, however, that even if mitigation (i.e., the provision of a global public good) is the main purpose of an aid project, there are usually some local co-benefits. A country receiving financial flows from mitigation aid may benefit, for example, through the creation of additional jobs, reduction of local pollutants, or increased energy efficiency that will make its industries

more competitive.

In contrast to mitigation, adaptation to climate change happens on a more local level. While in some cases, adaptation can reduce poverty within a given country, the benefits accruing to a country on account of adaptation measures, seldom lead to substantial cross-border benefits (Michaelowa & Michaelowa, 2012). As mentioned before, adaptation can be a private/local/regional or a transnational public good. For instance, using air-conditioning to combat the rising temperatures is usually a measure restricted to individuals or family members of the individual and is an example of a private good. Building new rainwater harvesting systems to deal with water shortages accruing on account of climate change can be an example of the provisioning a local public good since it will benefit the locality where such systems are put in place. Similarly, take the example of developing early warning systems to warn residents in a flood prone country like Bangladesh. Such early warning systems may also benefit several countries adjacent to the same river or seashore. But it will not benefit the world globally. What does this discussion mean for adaptation aid?

Climate change causes particularly acute problems where people are unable to adjust to its impacts properly (due to lack of knowledge and resources, or because they depend on subsistence agriculture and have no other income opportunities). Specific vulnerabilities to climate change faced by countries such as low-lying island nations or flood prone countries should be taken into account for financing adaptation. In other words, it makes more sense to tackle adaptation in poor countries by allocating them more adaptation aid. Given that adaptation aid addresses a rather local public good, the country receiving it will be the exclusive and distinct beneficiary of such aid.

Due to the global public good characteristic of mitigation, aid for mitigation has attributes that make it distinct from the traditional development aid or adaptation aid. The neediness of the recipient is not relevant anymore for the efficient allocation of resources unless co-benefits are really substantial (Bagchi et al., 2016). In fact, does it even make sense to speak of *aid* for mitigation when the poor and climate vulnerable countries would benefit even if mitigation takes place in rich countries like Switzerland? This thesis argues that nobody really needs mitigation aid locally, in contrast to other development or adaptation aid (which is defined by where it goes, namely to developing countries). Of course, many need mitigation somewhere in the world. When the country undertaking mitigation is no more of a distinct beneficiary of this aid, than any another country due to the non-excludability condition and non-rivalry, should this even be called aid (Michaelowa & Michaelowa 2012)? The drivers of mitigation aid and adaptation aid are different and speaking normatively, should be allocated to distinctive places depending on where it will generate maximum benefits. Only in very few cases (although theoretically possible), both should be given to the same country. These considerations have obvious consequences for the allocation of climate aid. Therefore, this thesis raises and aims to address the critical question - Are donors aware of the differences in the allocation criteria for adaptation and mitigation aid? If they are aware, are they allocating their climate aid efficiently? If despite being aware, donors are not allocating their climate aid efficiently, what barriers are they facing preventing or reducing efficiency? Such questions will be explored in the next chapter.

Chapter 3

Climate Aid: Exploring Donor Decisions

Based on the conceptual foundations laid down in the previous chapter, this chapter investigates some key issues relating to the allocation decisions driving climate aid. Initially, the chapter discusses which criteria should drive climate aid. Then, it explores whether donors have or use separate and well-defined criteria for allocating mitigation aid. Using insights from the political economy literature, this chapter also identifies and analyses the barriers that donors may face when they attempt to allocate their climate aid in an efficient way.

3.1 Introduction

From a normative perspective, development aid should be allocated to poor countries, given that they need such finance the most and the most common rationale for such aid is to increase growth rates in these countries. A similar rationale can be applied to the case of adaptation aid, which is needed by climate vulnerable countries who also often happen to be the poor ones. However, the same logic does not apply to mitigation aid. Mitigation aid aims to maximize the reduction of greenhouse gas (GHG) emissions per unit of mitigation aid disbursed (cost-effectiveness). To do so, it needs to target countries with a high (and low-cost) emission reduction potential, which are often middle-income/emerging countries rather than poor countries (see Chapter 2; Bagchi et al. 2016). However, donors may not follow this cost-effectiveness strategy or allocate mitigation aid to countries with high

abatement potential for different reasons. Firstly, they may be unaware of the fundamental differences between traditional development aid and mitigation aid, so that they may not have adjusted their allocation criteria. Secondly, they may face barriers emanating from their polities, reducing their allocation efficiency. This may be on account of their vested interests, conflicts arising between different ministries dealing with climate aid and due to public expectations, that aid needs to be allocated only to poor countries.

To sum up, since efficient mitigation aid requires allocation criteria that are quite different from traditional criteria for need-oriented aid allocation (Bagchi et al. 2016) the target of this chapter is to understand to what extent individual donors 1) are aware of these differences, 2) establish and apply a different list of criteria, and/or 3) face specific political barriers that impede an efficient allocation of mitigation aid.

This chapter adopts an exploratory approach to achieve its aims. The first step of the analysis is to discuss what criteria donors could potentially use in order to allocate their climate aid. The identification of the criteria is grounded on the conceptual considerations explored in chapter 2. Then, the political economy literature is used as a basis to formulate preliminary expectations about the factors that can explain inefficiencies in the allocation of mitigation aid. Using semi-structured interviews, attempts were made to investigate whether donors adopted specific allocation criteria for mitigation aid and to identify to what extent barriers emanating from the donors' own polities, impede or reduce efficient allocation. Furthermore, insights gathered from the interviews have been complemented with a thorough review of a number of secondary sources such as web articles, policy documents and donor mandates. The next section provides a brief overview of the literature on

climate finance, followed by a discussion on the efficiency criteria for climate aid allocation.

3.2 Brief Review of Literature on Climate Finance

As already discussed in the previous chapter, a substantial amount of literature on climate finance explores the architecture of climate finance channels (Caravani, Nakhooda, Watson, Schalatek, & Stiftung, 2012; Nakhooda & Watson, 2013). Studies are also dedicated to understanding how power, responsibility and accountability arrangements influence the legitimacy of international climate finance institutions (Ballesteros, et al., 2010), and to examining what amount of climate finance is required for burden sharing in a fair way (Dellink et al., 2009). Some studies focus on issues such as additionality of climate finance to existing aid commitments (Stadelmann, et al., 2011; Brown, et al., 2010); coding errors in reporting climate finance (Michaelowa & Michaelowa 2011) and the tracking of climate finance flows (Clapp et al., 2012; Tirpak, et al., 2014).

While donors have broadly agreed on the amount of climate finance that needs to be provided, discussions now center on how to deliver, mobilize and allocate it (Curran 2016). A handful of scholars also econometrically analyze the allocation of mitigation aid (Bagchi, et al., 2016; Michaelowa & Michaelowa, 2011) as well as adaptation aid (Betzold & Weiler, 2016; Betzold & Weiler, 2017; Persson & Remling, 2014; Remling & Persson, 2015; Michaelowa & Michaelowa, 2012).

None of the studies, however, assessed what criteria donors themselves claim to actually use for allocating mitigation aid and to what extent they can be considered to be efficient. Moreover, the extant research on climate aid has also not investigated the domestic constraints of donors that could cause

reduced allocation efficiencies. The next section presents what criteria donors should actually use for allocating their climate aid, before identifying what factors can lead to a reduced efficiency in allocation.

3.3 Allocation Criteria of Climate Aid

An important condition for a financial mechanism to be cost-effective or efficient is to set up clear eligibility or prioritization criteria (Karousakis & Corfee-Morlot, 2007, Kim, et al., 2009). This may include establishing criteria to support the allocation of aid to and within regions as well as sectors or activities (Kim et al., 2009). Efficiency in the allocation of public climate aid can be defined as ‘‘allocation of public resources such that net social benefits are maximized’’ (Persson & Remling 2014, p. 489). To be effective, mitigation aid and adaptation aid should follow different allocation criteria since both have distinct objectives.

Adaptation aid aims to ‘reduce the vulnerability of human or natural systems to the impacts of climate change and climate related risks’ (OECD, 2011). This implies that the allocation of adaptation aid needs to take into consideration specific vulnerability related criteria of a country. For instance, low lying countries or countries more prone to extreme weather events such as floods or droughts need higher amounts of adaptation aid. These climate vulnerable countries are unable to finance the measures required for adaptation and are poor. In other words, a country’s ability to adapt to the effects of climate change is directly related to its income resources and the poorer it is, the less it is able to adapt to the effects of climate change without external financial help. Therefore, from a development standpoint, it makes sense to allocate adaptation aid as donors would allocate other development aid, i.e. on the basis of need.

In contrast to the drivers of adaptation aid or other development aid, using neediness as a criterion to allocate mitigation aid would be quite misleading. In fact, if a donor allocates mitigation aid to needy (or poor) countries, the aid will be rather inefficient, because these countries do not generally offer cost-effective emission reduction opportunities. Since mitigation aid is a form of global public good aid, funding should go where a given amount of aid can produce the greatest emission reductions (independently of the locations that benefit most from the reductions since they will benefit anyway, no matter where the reduction takes place) (Bagchi et al., 2016). To prioritize mitigation actions, cost-effectiveness is the most important criterion (Tanner and Phathanothai, 2014). Efficiency of mitigation aid allocation can be measured in mitigation outcome per monetary unit, i.e. t CO_2 equivalent mitigated per dollar of mitigation finance spent. It is negatively, rather than positively correlated to poverty in developing countries. Several studies have already established that there is a close correlation between GDP growth and emissions (see for e.g. Heil & Selden, 2001; Schmalensee, et al., 1998). This is especially true for rich industrialized nations, which continue to grow and produce high levels of emissions. But the potential for relatively low-cost emission reductions usually lies in growing, emerging economies (Chapter 2, Bagchi et al., 2016). This claim is supported by the analysis of marginal abatement costs (MAC) of different countries.

The marginal abatement cost (MAC) curve is an important representation of the size of various abatement measures according to cost and each country's MAC curves vary depending on factors such as endowments of fossil fuels, emission patterns etc. Analysis of MAC curves show that middle income countries have higher proportions of emissions and more abatement opportunities which come from sectors such as energy, industry and transport (Tanner and Phathanothai, 2014). That middle-income countries provide high

mitigation opportunities also became apparent from the development of the market for tradable 'certified emission reductions' (CERs) under the 'Clean Development Mechanism' (CDM) of the Kyoto Protocol. This market allowed project developers in developing countries to sell emission reduction credits to firms and governments of developed countries who could then make use of these CERs to comply with their commitments in the framework of the Kyoto Protocol. Figure 3-1 provides a snapshot of the distribution of these CDM projects. It clearly confirms that the most efficient locations for emission reductions have been in the more advanced developing or emerging economies, notably in China, India and Brazil, rather than in the poorest countries. If we base our understanding on the fact that the private sector always has a profit maximization motive (thus cost-effectiveness), then an efficient donor should allocate their mitigation aid to China, rather than Bangladesh, which will eventually benefit the latter more.

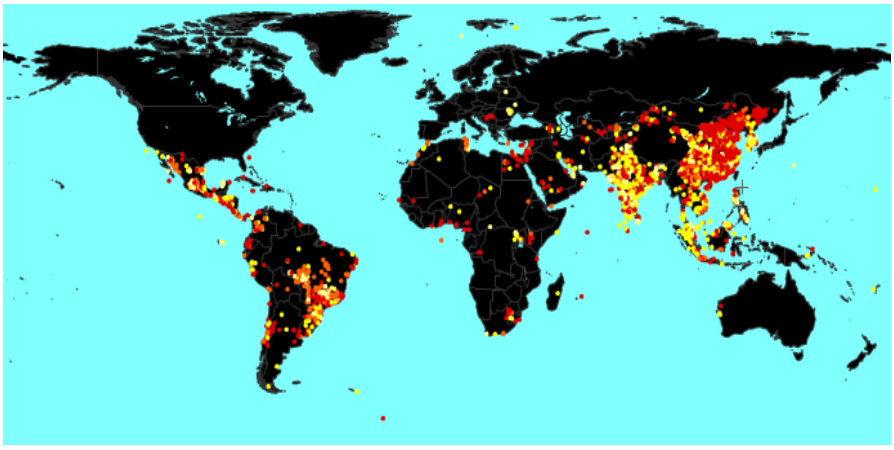

Figure 3-1 Distribution of registered CDM projects (Source: UNFCCC, 2016)

These discussions demonstrate that mitigation aid has attributes that make it distinct from the traditional development aid (or even adaptation

aid), and the needs of the recipient are not relevant anymore (Bagchi et al., 2016). Since the allocation criteria of mitigation aid should be very different from that of adaptation aid or general development aid, it is not only interesting but also important to study them. Here, we clearly need to go beyond the normally assumed objectives of development aid. An important caveat however is that mitigation measures may be constrained by other political as well as institutional factors, which will in turn influence where aid addressing mitigation is allocated. It can very well be that cost-effectiveness is not the only parameter influencing donor's decision making. Such political and institutional factors, which may also have an impact on how donors decide to allocate their mitigation aid, is discussed in the theoretical section

3.4 Theoretical Framework: Drivers of inefficiency in Climate Aid Allocation

This section will try to shed light on how aware donors are of the criteria that should drive mitigation aid. This should be reflected in their choice of criteria on the basis of which they decide on their mitigation aid allocation, namely cost-effectiveness of GHG emissions. Secondly, being adopting the criteria to reflect on efficient allocation of mitigation aid, donors' efficiency may get affected by various political and institutional factors, reducing their allocation efficiency. Such factors are identified and discussed below.

3.4.1 Within Country Dynamics and Inter-Institutional Differences in Priorities

Public policy scholars have often pointed out that organizational culture has a significant influence on how officials from different institution view a policy problem and influence policy processes (Kingdon, 2003). This view propagates hence, that each ministry wishes to pursue own imperatives. The objectives of all of these ministries/institutions/development aid agencies in the donor

countries may vary and might even be in conflict with each other.

A few studies suggest that amongst the different ministries, some ministries (such as finance ministries) are more protective or guarded against spending public revenue (Wildavsky, 1986) while others, which support specific objectives (such development aid) are keener on spending more money to reduce poverty poor countries (t'Hart, & Wille, 2012, p. 317). What will drive efficient allocation of development assistance will vary significantly depending on how the power is shared among different ministries as well as the ways in which each ministry comprehend the missions they support (Pickering et al, 2015). Such insights can also be applied to the specific case of climate aid.

A substantial amount of climate finance is spent bilaterally, mainly through existing development agencies (Nakhooda, et al., 2016). According to Skovgaard (2012), aid agencies have usually played an important role in implementation but in the recent years, other ministries such as finance ministries have also started getting involved in implementation leading to an increasing complexity of the climate aid architecture. This might lead to differences in allocation efficiency based on which ministry deals with climate aid and how they interpret their mandates. Knowing this is essential because ultimately these differences will influence the types of programs and projects that are supported. Another complication that can arise when development aid under the development ministry/aid agency addresses climate change or environmental issues are that there may be conflicts regarding which objective to care about more– development or climate and environment. Funds that can actually address poverty might be deployed for emission reduction (Bagchi et al., 2016). In fact, according to Michaelowa & Michaelowa (2012, p. 41), the magnitude of mitigation activities has to be huge for mitigation aid to have

any significant impact on poverty reduction.

A poverty-based allocation discussed in Chapter 2, can also be made on the basis of co-benefits of mitigation aid such as, generation of employment, reduction of pollution and so on. Development ministries/aid agencies may argue for a poverty-based criterion for mitigation aid on the basis of such co-benefits. Understandably, the development ministries/aid agencies will care more about poverty reduction related issues and be more inclined to allocate mitigation aid to poor countries. In contrast, environment ministries might have more knowledge/concern for climate and environment. They may be more aware of the fact that poor developing countries will benefit more, if mitigation aid is allocated on the basis of cost-effectiveness, namely to emerging economies with higher emission potential. Overlaps in jurisdiction of climate funds between these two types of ministries may lead to incoherent policy making and therefore, reduced efficiency in allocation. In addition, each department will have different priorities guiding their fund allocation. This leads to two expectations:

I. *Development ministries/aid agencies are more concerned about addressing poverty with mitigation aid and will not base their decisions on cost-effectiveness while environment ministries will be more concerned with cost-effective allocation.*

II. *When development ministries/aid agencies and environment ministries both deal with climate aid in a donor country, allocation inefficiencies can arise since the former may care more about poverty while the latter, about climate and environment.*

In contrast to development ministries/aid agencies that are usually willing to spend more in poor countries, guardians of the public state budget

such as finance or economic ministries will try to minimize costs to their states' budget (Müller, 2009) and may be more concerned about efficient spending. In fact, such ministries are known for their "budget-oriented" disposition. This leads to the expectation that:

III. Ministries such as finance or foreign affairs dealing with climate aid will be more concerned about the efficient allocation of their financial resources and will prefer to allocate their mitigation aid on the basis of cost-effectiveness rather than poverty.

While efficiency of mitigation aid allocation can be affected by the involvement of different ministries, lack of coordination across the different ministries involved in climate aid allocation can also be important. This chapter will assess to what extent these within country dynamics and conflicts or lack of coordination may affect the efficiency of mitigation aid allocation.

3.4.2 Strategic Priorities of Donor Institutions

The political economy literature suggests that in addition to recipient need, selfish interests of donors drive development aid allocation. Selfish interests can be geopolitical and economic or commercial in nature (Kuziemko & Werker 2006; Faye & Niehaus 2012; Berthélemy, 2006; Berthélemy & Tichit, 2004). These strategic priorities may also hold for the case of mitigation aid allocation. Some such strategic priorities relevant for mitigation aid allocation are identified and discussed in the following sub-sections.

Partner Countries

Aid selectivity, i.e. the selection of countries and the allocation of resources following specific criteria is indispensable for aid to reach its developmental

goals. Baydag, et al., (2018) claim that the criteria determining partner country selection is important to understand the objective of development aid allocation and implementation. So far, research on the choice of partner countries show that it can be done on the basis of need (the countries are poor and do not have sufficient financial resources) (Lumsdaine & Schopf, 2007; Berthélemy, 2006); performance (countries with good economic and political governance which spends the received development aid money in an effective way) and strategic interests (such as favoring ex-colonies, establish good trade relations, geopolitical considerations) (Alesina & Dollar, 2000; Lancaster, 2008). According to OECD (2006), choosing a partner country to spend development aid resources reflects inherent preferences and political choices of the donors, which is a strategic dimension of an aid program. Germany, for instance declares that its partner countries have been revised to cater to German interests, such as strategic partnerships and global environmental goods (Betzold & Weiler, 2017). Faust (2011, p. 5) notes that when it comes to partner countries of donors, "Ministers and top aid managers often have their own personal preferences which may be shaped by their personal experience or the influence of important lobby groups." To ensure that the aid spent is effective, global agreements on aid effectiveness also encourage donors to focus on a particular set of so-called 'partner' countries following the global agreements on aid effectiveness (see OECD DAC, 2011).

The choice of partner countries is very important for the allocation efficiency of mitigation aid. If the partner countries of donors are not places with substantial mitigation opportunities, it may not lead to an efficient allocation from a cost-effectiveness point of view.

Take the example of energy related issues in developing countries. Inability of developing countries to address mitigation concerns at an early

stage in their energy policy may create lock-in to inefficient and dirty energy infrastructure, which may make future mitigation efforts difficult and expensive (Phathanothai and Tanner, 2014). Therefore, mitigation aid can contribute to renewable energy transition and improving energy efficiency in developing countries. In this regard, two considerations become relevant. First, there is the issue of suppressed demand for electricity, which needs to be addressed. That is, people in low-income countries often have demands for access to electricity, which is often not met due to reasons such as poor infrastructure, for example, inaccessible grids. In this case, the demand to consume electricity remains suppressed till people get access to electricity. In such low-income countries, donors may therefore, finance large-scale infrastructure projects through their mitigation aid. By the time the poor people get connected to the grid; the infrastructure built may not be the most efficient anymore due to technological advancements, therefore, resulting in a somewhat inefficient allocation of mitigation aid. Eventually, this may not even lead to substantial emission reductions. Second, bringing cleaner renewable and clean energy technologies to poor people can also be somewhat complicated. Providing rural areas in poor countries with renewable energy solutions will lead to some small-scale development benefits but also very small emission reductions owing to low energy consumption by poor people (Tanner & Horn-Phathanothai, 2014). This means that donors often have to decide between reducing emissions cost-effectively and caring more about providing energy access to poor people (therefore, development). This discussion reveals that donors might have distinct priorities that they wish to address through their mitigation aid.

If donors may prioritize the development first approach over cost-effectiveness this will be evident by their choice of partner countries. The related expectation then would be that:

IV. Donors that choose to work with poor countries for mitigation rather than emerging economies with high mitigation potential care less about cost-effective allocation.

If donors are driven by cost-effectiveness related concerns then a preference to work in middle-income economies with ample mitigation opportunities can serve as a somewhat rough proxy. The expectation in this case is:

V. Donors that choose their partner countries for mitigation on the basis of abatement potential care more about cost-effective emission reductions.

The choice of partner countries may also be driven by other efficiency gains which donors may accrue from working with reliable implementation partners. Donors may have a path dependency in the sense that they choose to work with the same countries they have worked with in the past and be unwilling to change partners. The theoretical literature also discusses the positive effects of working with recipient governments that are reliable implementation partners (Hefeker & Michaelowa, 2005). It can be lower administrative costs, economies of scale arising from country expertise, etc. When you know a partner very well, you may be able to work with that partner more efficiently, and this may circumvent some questionable subject-specific targeting priorities. According to Betzold and Weiler (2018), donors are more willing to work with partners where past projects have seen success. This leads to the expectation that:

VI. Donors often prioritize existing working relations with recipients over cost-effective mitigation aid allocation on account of path dependency.

Promotion of Business Interests and Leveraging Private Climate Finance

Donors often have economic motives driving their aid allocation. These economic motives may be related to donors promoting their own business interests using development aid. For instance, according to Takagi (1995), Japanese development aid was used to gather sources of raw materials for its industries in Japan. The UK aid strategy released by the Department for International Development (2015), claims that UK not only meets its responsibilities to the world's poorest but also serves and protects its own interests. It aims to generate international business prospects, also for UK companies (ibid: 2015). However, there is very little evidence to support the achievements of positive results, in terms of reducing poverty or creating jobs, from the programs and partnerships involving the private sector (GPEDC, 2017; IDEV & AfDB, 2016). Such motivations may also exist in the case of mitigation aid and will be explored in this analysis.

Donors may also be concerned about leveraging climate finance with their mitigation aid money. According to Brown and Jacobs (2011, p. 1) "leveraging refers to the process by which private sector capital is mobilized as a consequence of the use of public sector finance and financial instruments." Several studies analyze the way in which public finance leverages private sector investments (LSE 2009; te Velde 2011; Ward 2010). As mentioned before, donors agreed to jointly mobilize US$100 billion per year by 2020 (UNFCCC, 2009 Decision 2/CP.15, para. 8). Out of this amount agreed, it was expected that the private sector would contribute a substantial portion (Stadelmann et al., 2013). Therefore, donors may prioritize leveraging private climate finance to reduce their own financial burdens instead of caring for efficient allocation. In fact, there is a widespread interest among donor

countries to use climate aid to scale up private sector leveraged funds (Reyes, 2012). However, leveraging private sector funds through climate aid comes with several problems. First one relates to the wrong assumption that high leveraging ratios are good. For instance, if the World Bank claims that, for every US$1 it contributes to a particular investment, private companies invested US$10, this would be a 1:10 leverage ratio. This does not necessarily mean that the high leverage ratio has been a good use of mitigation aid resources in terms of reducing emissions. In fact, often there is an inverse relationship between leveraging and reducing GHGs. One of the reasons is that low-cost emission reduction options do not need much additional investment to be efficient (Sierra, 2011; Nakhooda, 2013). In fact, leveraging huge amounts of finance might not even set the right incentive to spend that money in the most cost-effective mitigation options. For example, leveraging can affect mitigation allocation efficiency, through notably, a different country choice. For instance, a donor wants to allocate mitigation aid to country A, which has a high emission reduction potential. However, this donor is faced with the problem that due to, say regulatory requirements, private investment required for leveraging climate finance is hard to attract. Private investors, instead, want to invest in country B, which may have a lower mitigation potential than country A but a friendlier regulatory setup. Since donors are always keen to show that they have mobilized a large amount of finance with their aid money (through leveraged finance in this particular case), they might decide to invest in B and not A.

The take away message from this discussion is to remember that while public aid flows are supposed to have a social welfare maximization objective, the private sector generally operates on the basis of profit maximization. So, mitigation projects might not be geared clearly towards maximum mitigation if private sector firms also contribute to a project, even if this might be the

primary objective of the donor country. This clash of objectives can lead to significant inefficiencies in allocation. Therefore, the expectation that can be derived from this discussion is as follows:

VII. Donors often prioritize maximizing business interests and leveraged finance, rather than caring about cost-effective mitigation.

3.4.3 Public Expectations

Public expectations can play an important role in the allocation of ODA. Countries with greater public support for development finance are inclined to raise the level as well as quality of spending on it (Lumsdaine, 1993, p. 63). Depending on the country, expectations from the public can also be that foreign aid be spent in poor countries Faust (2011, p. 4) or be spent domestically within their own borders. For example, Oliver (2014) conducted a poll in Australia which revealed that 75% of the population say 'helping reduce poverty in poor countries' is the most important objective of aid.

Whatever be the opinions of the public on the issue of aid, it is also important to keep in mind that the public is often not aware of the issues addressed by aid. Glennie et al., (2012) find that the public had limited grasps over issues relating to development aid. This finding is especially relevant for the case of mitigation aid. Since the public in donor countries often have constrained understanding of how development aid works, they may not support the allocation of mitigation aid to middle-income countries or want the money to be spent domestically. Their limited understanding of the concept of mitigation as a global public good, which will benefit poor countries more or even themselves if done efficiently (in other cost-effective locations), may lead them to pressurize the government into poverty-based allocation of mitigation aid or cut back on aid flows. In other words, this pressure to

finance poor countries could come from the public due to a lack of understanding of the characteristics of global public goods or from the moral obligation to support poor countries without knowing what the best way is.

Influence from the public can therefore, lead to three different outcomes. Donors may either give in to the pressure and finance mitigation projects only in poor countries or continue to allocate mitigation aid on the basis of efficiency consideration or cut back on aid support to address climate change.

In trying to understand how public expectations can influence aid allocation, it is also imperative to delineate how such influences can vary depending on the actors. Each actor may have different roles to play. These actors usually are the general electorate of the donor country, NGOs, religious organizations, business lobbies, etc. There is an extensive influence on policymakers by NGOs, church and other civil society organizations through lobbying, use of petitions and consultations (Zimmerman, 2007). While their influence varies by country, many of these organizations are a conduit for the aggregation of public opinion through which policymakers are often influenced (ibid: 2007). For instance, business groups will try to influence the aid policy of donor countries to open up new markets for their products. Based on the findings of this literature on aid and public opinion, in the case of mitigation aid the expectation is that:

VIII. The public in donor countries wishes for mitigation aid to be allocated to poor countries, which may lead to inefficient allocation and their influence on the government's decision, varies by different actors.

3.5 Research Design

This chapter adopts a qualitative methodological approach to analyse the theoretical propositions. Semi-structured expert interviews with representatives of the donor countries were first conducted. The advantage of the semi-structured interviews was that it enabled enquiring further with follow-up questions, while at the same time, preventing interviewees from diverging from the questions essential to this study. This format allowed the interview to evolve in a conversational manner allowing the participants the chance to talk about issues they felt were important. To be able to make the process comparable though, an interview guide was used (King & Horrocks, 2010, p. 163) (see Liebold & Trinczek, 2009 for more information on this type of interview technique).

The interview guide was structured as follows: Preliminary questions were aimed at determining the role of the interviewees within the organization, and whether they were involved in the climate aid allocation process or, if not, whether they could observe the processes. The interview was continued only if either of the two questions was answered in the affirmative. The second part of the guide was aimed at finding out what criteria donors apply to fund mitigation projects, how the criteria were derived and whether they see room for improvement of these criteria. Third, questions were asked about whether expectations from the public had any influence on their decisions to allocate climate aid. The last question was about how governments justify the use of development aid money for the purpose of financing mitigation. Since asking about donors' business interests, motivation for leveraging and conflicts between departments was a somewhat sensitive issue, it was examined in the course of a casual conversation. This was possible since the interviews were semi-structured and there was no need to strictly adhere specifically only to these questions or the order in which they were asked. See appendix A.1 for

the interview guide.

In order to gather the different perspectives from various donors, it was essential to have some variation within the sample. Therefore, the choice of initial few interviewees were made on the basis of three different considerations.

A) Regional variation - The sample represented some members of OECD Development Assistance Committee (DAC) donors with regional variation. For example, it included donors from Nordic countries, Western European countries, and non-European countries. However, the sample did not include any of the southern or Eastern European countries because they are mostly relatively new donors with little amounts of funding and less experience within the DAC. The lack of experience within the DAC might be a reason for them to not have very well-defined criteria for allocating their mitigation aid.

B) Ministerial representation - The aim was not only to interview the representatives of development ministries or aid agencies but also from other ministries such as environment, finance or foreign affairs. This would inform the analysis of various perspectives that donors can have based on which ministry/ministries in their country deals with climate aid.

C) Donor type - The type of donor- whether multilateral or bilateral donor, was taken into consideration in this analysis to ensure that views from both types of donors were integrated in this analysis.

Choosing the first few interviewees on the considerations discussed above was important, otherwise the risk of collecting evidence from just one perspective would have been high (since people tend to refer to likeminded

people who would reinforce their opinions). After the first few interviews, the process of snowballing helped identify other potential interviewees. Snowball sampling is a non-probability sampling technique, where a few people are interviewed and then they provide connections to other potential interviewees. This technique was important because for most people working on climate aid, publicly available information is sparse and such people are often difficult to identify within an organization. Overall, the group of interviewees remains rather small. However, the richness of information gathered from these few interviews was sufficient for this analysis.

An important caveat in this analysis is that almost without exception, all interviewees requested strict anonymity. They will hence, not be named individually when we use information directly from the interviews itself. This refusal by donors to be named indicates that climate aid allocation is a somewhat sensitive issue and donors may not be comfortable with others knowing what criteria drive their allocation. However, to allow for some identification and comparability between the donors, the following monikers are assigned: Nordic donors (ND), Western European donors (WED), non-European donors (NEU), and multilateral donors (MD). Additionally, the type of ministry or agency they represent will also be named.

A total of 15 interviews were conducted where the interviewees represented 12 bilateral donors (consisting of representatives from finance ministries, development and environment ministries and an aid implementing agency) and 3 multilaterals (consisting of development banks and a multilateral climate fund). Out of these 15, 10 interviews were conducted face-to-face at the Subsidiary Body for Implementation (SBI)/Subsidiary Body for Scientific and Technological Advice (SBSTA) meeting of the UNFCCC in May 2017 as well as at the Conference of the Parties (COP 23) in November

2017. Both the events were held in Bonn, Germany. Additional interviews with donors that were not available for face-to-face interviews were completed over the telephone and Skype in the same time period. On average, each interview lasted for 40 minutes. They were recorded with the permission of the interviewees and later transcribed for this analysis. The data was analyzed after assembling all the information, which included synthesizing information from the transcripts of the interviews. Complementing these interviews were an extensive review of secondary sources such as existing public documents, (for e.g. reports, and charters), official documents and peer reviews of the DAC donors. The findings of this analysis are presented in the next section.

3.6 Empirical Findings

The empirical findings are discussed in this section keeping with the way the theoretical section was structured. The first part of the results in each sub-section presented uses publicly available information and therefore, the donors will be named by their actual names (not monikers).

Before, focusing on the theoretical drivers of inefficient aid allocation results from the research on whether donors had specific criteria for allocating their mitigation aid is presented. The bilateral donors presented in table 3-1 are the traditional OECD Development Assistance Committee (DAC) donors. Among the multilateral donors and climate funds, only those already discussed in chapter 2 have been presented. N/A indicates the columns for donors whose mitigation aid allocation criteria were not found upon extensive web searches. Donors may have several other eligibility or prioritization criteria unrelated to mitigation per se. These were not included in the table below since the focus of this analysis is only on mitigation aid allocation. The findings of the table are synthesized and described after the table is presented.

Tab. 3-1: Donor criterion for mitigation of aid allocation

Donor	Bi-or multilateral donor	Specific indicator for mitigation project selection?	Description of indicator	Source
United Kingdom	Bilateral	No specific mitigation criteria found	N/A	N/A
Germany	Bilateral	Yes	Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU): GHG emissions reduced or	BMUB, 2015; BMZ, 2014
France	Bilateral	Yes	Agence Française de Développement (AfD): Intervention that avoids more GHGs emissions than it generates during	Smallridge et al., 2013
Italy	Bilateral	No specific mitigation criteria found	N/A	N/A
Ireland	Bilateral	No specific mitigation criteria found	N/A	N/A
Japan	Bilateral	Yes	GHG emissions reduced or avoided annually	JICA, 2011
Austria	Bilateral	No specific mitigation criteria found	N/A	N/A
Belgium	Bilateral	No specific mitigation criteria found	N/A	N/A
The Netherlands	Bilateral	Yes	GHG emissions reduced or avoided annually	Ministry of Foreign Affairs, 2016
Spain	Bilateral	No specific mitigation criteria found	N/A	N/A
Portugal	Bilateral	No specific mitigation criteria found	N/A	N/A
Switzerland	Bilateral	Yes	GHG emissions reduced or avoided annually	SDC, 2017
United States	Bilateral	No specific mitigation criteria found	N/A	N/A
Canada	Bilateral	No specific mitigation criteria found	N/A	N/A

Donor	Bi-or multilateral donor	Specific indicator for mitigation project selection?	Description of indicator	Source
Denmark	Bilateral	Yes	Cost-effectiveness	DANIDA, 2016
Norway	Bilateral	No specific mitigation criteria found	N/A	N/A
Sweden	Bilateral	No specific mitigation criteria found	N/A	N/A
Finland	Bilateral	No specific mitigation criteria found	N/A	N/A
Australia	Bilateral	No specific mitigation criteria found	N/A	N/A
New Zealand	Bilateral	No specific mitigation criteria found	N/A	N/A
Green Climate Fund (GCF)	Multilateral	Yes	Impact potential: expected t CO2 eq to be reduced or avoided/cost-effectiveness	GCF, n.d.
NAMA Facility	Multilateral	Yes	t CO_2 eq reduced in the previous calendar year compared to the business-as-usual (BAU) scenario, which is set at zero at the start of project implementation).	NAMA Facility, 2015
Global Environment Facility (GEF) Trust	Multilateral	Yes	Cost-effectiveness	Kim et al., 2009
African Development Bank (AfDB)	Multilateral	Yes	(a) Potential for GHG emissions savings (b) Cost-effectiveness	N/A
Asian Development Bank (ADB)	Multilateral	Yes	(a) Potential for GHG emissions savings (b) Cost-effectiveness	N/A
World Bank	Multilateral	Yes	GHG emissions reduced or avoided annually and GHG sequestration	World Bank, 2015
Forest Investment Program (FIP)	Multilateral	Yes	GHG emissions reduced or avoided annually and GHG sequestration	Climate Investment Funds, 2009
Scaling-up renewable energy programme for	Multilateral	Yes	Renewable energy potential in low income countries	Kim et al., 2009
Climate Technology Fund (CTF)	Multilateral	Yes	(a) Potential for GHG emissions savings (b) Cost-effectiveness	Climate Investment Funds, 2009

Table 3-1 shows that some donors have publicly available information on the criteria used to allocate mitigation aid while others do not, at least during the time of analysis. Out of the 29 donors presented above, 16 have specific mitigation criteria. Among those bilateral donors who do have specific mitigation project/program selection criteria, few have a *cost-effectiveness* perspective while others have a *GHG reduced or avoided annually* criterion. For the multilateral funds, the UNREDD, FIP and the CTF allocate mitigation aid to countries with high mitigation potential, indicated by long-term GHG emissions savings (Kim et al., 2009). Other multilateral development banks, such as the AfDB, ADB, etc. as presented in the table jointly assess the criteria for investments, based on the CTF eligibility criteria (World Bank, 2008).

Bilateral donors sometimes institute dedicated funds to climate finance and these funds/funding instruments often have specific mitigation project selection criteria and this varies across donors. For instance, Germany's climate aid funding instrument known as International Climate Initiative (IKI) financed by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) judges mitigation project proposals on the basis of the Action Mitigation Indicator. This is a quantitative indicator measuring the reduction in GHG emissions and increases in carbon storage (measured in t CO_2 equivalent) in the project/program area. The UK government also has a flagship fund known as the International Climate Fund (ICF). The Department for International Development (DfID), the Department of Energy and Climate Change (DECC) and the Department for Environment, Food and Rural Affairs (DEFRA) jointly manage this fund. For mitigation projects, they consider only the GHG emissions reduced or avoided, as a performance indicator (Pearce & Hickman, 2017). Unlike IKI, the ICF does not take into account increases in carbon

storage.

The information gathered from the interviews more or less conforms to the findings from the publicly available information. There is a significant variation in how donors engage with the recipients for financing mitigation. Some of donor-funded climate funds have a project-based approach while other donors have a program-based approach. For project-based approaches, donors usually finance particular projects with a climate related objective. For instance, if Switzerland finances one solar power plant in Tanzania to help mitigate GHGs, it would be considered to be project-based aid. For program-based aid, the approach is different. According to the OECD (2008), a program-based approach is engaging in development cooperation supporting locally owned program of development. For instance, say, India would like to overhaul its electricity sector by moving away from coal-fired plants to renewable sources of energy. India would then engage with donors to gather financial support for such an endeavor, perhaps targeting the electricity sector all over India. For donors, who have a program-based approach, the interviews revealed they often did not have any specific mitigation related criteria for allocating their aid.

Among the western donors, the results regarding awareness were somewhat mixed. WED 4 (environment ministry) claimed that they prioritized least developed countries (LDCs) and small land developing states (SIDS) and allocated both adaptation as well as mitigation aid to them. There are no specific criteria for allocating such aid. WED 5 (environment ministry) said that most of their partners for bilateral cooperation were LDCs and former colonies. Hence, most of their climate aid went to these countries. Often, they addressed development and climate concerns within the same project. If they finance a school in their partner country and the school had

solar panels installed, they will consider such a project as a mitigation project. For these two donors, the findings were not in line with what was expected. Environment ministries actually prioritized poverty based allocation rather than cost-effective mitigation. In contrast, one interviewee said that in addition to their own criteria, they also follow the criteria developed by GCF (WED1a, environment ministry) (see Appendix A.2 for a list of GCF criteria). One of the GCF indicators is that of cost-effectiveness indicating that the environment ministry of WED1 did take this into account in their allocation decision.

For the Nordic donors, there was a significant variation in how they dealt with climate aid and which recipient they engaged with. One respondent maintained that mitigation aid required large-scale investments, which is difficult to achieve on a bilateral basis (ND1, ministry of foreign affairs). For bilateral cooperation, ND1's focus was mainly on LDCs and African countries for which adaptation finance was more relevant. This focus on poor countries is based on their development aid principles, which prioritize poor and needy people and they preferred to channel their mitigation aid through multilateral channels. Respondent from ND2 (environment ministry) had a clear focus of working with middle-income economies (which are often good locations for cheap emission reduction opportunities) for financing mitigation. They also have specific GHG reduction criteria for choosing mitigation projects. Overall, it seemed that the Nordic donors were actually efficient in their approach to mitigation aid allocation. While ND1 handed over the allocation of mitigation aid to multilateral channels, ND2 was actually focusing on middle-income countries for mitigation.

Among the non-European donors, NEU1 (ministry of foreign affairs) and NEU2 (ministry of foreign affairs) both focus on their existing

partnerships with some island nations and does not have separate criteria for funding climate projects. For such donors, who do not have a specific criterion for climate aid allocation we can observe a tendency toward path dependency – they did not see the importance of adapting their allocation practices to cater to mitigation efficiency but rather chose to continue allocating it in the same way as they do other development aid. Moreover, it seemed that they prioritized maintaining regional influence over cost-effective mitigation aid allocation.

For the multilateral donors, one respondent declared that for mitigation, the agency took into consideration the emission intensity of a country, i.e. emissions per unit of GDP (MD1, Multilateral Development Bank). This donor was, however, constrained to work in a given region of operations and could not choose to invest elsewhere. A second donor stated that they followed the joint multilateral development bank (JMDB) methodology and emission reductions to be achieved in selecting projects (MD2, Multilateral Development Bank). This information from the interview confirms the findings presented in table 3-1. According to the JMDB, mitigation aid should be allocated on the basis of a list of activities that are considered to be compatible with low-emission pathways and reduce GHGs (EIB, 2016). These activities are, for instance, electricity generation from renewable sources, energy efficiency improvements in existing thermal power plants, reduction of energy use in agriculture, etc. (see Joint MDB report 2017 for an exhaustive list of such mitigation activities). However, not all activities that reduce GHGs are financed. For example, some hydropower plants, which emit high levels of methane from reservoirs exceeding GHG reductions associated with the plant's use of renewable energy, are not considered for financing. More importantly, the JMDB (2017, p. 8) clearly recognizes that 'a one-ton reduction of CO_2 emissions has the same impact regardless of where

the activities are located. [...] adaptation activities are project- and location-specific, and they respond to specific climate vulnerabilities.' This demonstrates that at least the multilateral development banks are aware of the fundamental difference between the two different objectives (one global and one local) of climate aid. Of course, one cannot preclude with certainty whether these banks also have other strategic priorities that may prevent a cost-effective allocation of mitigation aid.

Summing up, the analysis reveals that some donors are clear about where mitigation projects should go, i.e. to those countries with the highest mitigation potential. A few donors did not have separate criteria for allocating their mitigation aid and allocated it the same way they do other mitigation aid. Some donors often prioritized LDCs/former colonies/SIDs that are often places with low mitigation potential.

In the context of efficiently allocating mitigation aid, the discussions point to the need for using different frameworks for mitigation aid and for development aid. In other words, donors may use their existing frameworks for allocating development aid (even adaptation aid) but could potentially follow a different approach (based on abatement potential of recipients), for allocating their mitigation aid. Given that there are different paradigms of efficiency, if donors can replace one determinant of efficiency with another (say donors are not reducing maximum emissions cost-effectively, but reduce leakages of aid money due to corruption) their choices may, however, still be justified.

3.6.1 Within Country Dynamics and Inter-Agency Differences in Priorities

As outlined in the theoretical section, it is expected that differences in priorities between different ministries dealing with climate change issues cause inefficiencies in allocation in some cases; while for others it provides opportunities for a more efficient allocation. From the review of donor mandates, it was evident that sometimes development ministries of the government focuses on poverty-oriented finance allocation while others such as foreign affairs or economic ministries focus on middle income countries which are often important locations for dealing with transnational or global problems. Germany explains their objectives of development cooperation in a very clear manner. Their development cooperation is based on the dual objective of moral responsibility or as they put it 'because prosperity comes with obligations' and solving global problems which affect them as well – 'because everyone benefits' (BMZ, 2018). To achieve this dual objective through their development cooperation, Germany's Federal Ministry of Economic Cooperation and Development (BMZ) has a clear division of priorities. Emerging economics such as Brazil, Indonesia, India, Mexico and South Africa, are prioritized for the protection of global public goods (e.g. reducing CO_2-emissions, or protecting rainforests) (Baydag, et al., 2018). Germany's IKI is focused on allocating climate mitigation finance to newly industrializing economies with a high level of potential for reducing greenhouse gases as a result of their emerging economy status. For Switzerland, the Swiss Agency for Development and Cooperation (SDC) works with low-income countries while the State Secretariat for Economic Affairs (SECO) focuses on middle-income countries.

This separation in objectives might come with its own unique problems. Take the example of Belgium. The federated entities of Flanders, Wallonia-Brussels International and Brussels-Capital all have their own legislation and policy frameworks, which have often led to conflicts owing to a lack of

transparency over how the responsibilities for development cooperation would be shared across these different entities (OECD, 2015). While these findings mainly relate to ODA, they may also hold in the case of mitigation aid.

As mentioned in the theoretical section, there may be problems when development and environment ministries, both deal with climate change financing. An important case of conflict in objectives between development ministry and environment ministries is that of Norway's International Climate and Forest Initiative (NICFI). Launched in 2007, NICFI aims to reduce deforestation. Initially, NICFI was set up under the Ministry of Environment, led by the Erik Solheim, who was simultaneously the Minister of Development. However, when he stepped down from his post, the institutional set became complicated because both, development and environment ministries had authority over NICFI (Asselt, 2015). While the former was more concerned with poverty reduction, the latter was more concerned about the climate and environment. This division in objectives may have led to bureaucratic problems and incoherent decision-making with the NICFI (Mcneill, 2015).

Conflicts between different ministries may also arise in the absence of a comprehensive climate aid strategy. Studying the case of Germany, Enting & Harmeling (2011), claim that there was an absence of a unifying climate aid strategy, which led to competition and suspicion amongst BMUB and BMZ when the IKI was set up in 2008. On the other end of the spectrum, is the case of UK. The OECD DAC's (2014) peer review of UK found that the UK has a consistent cross-government approach, in their management of the International Climate Fund (ICF) fund, which is run by three different government entities. Funding decisions were taken in a consistent way with broad agreement across the different departments (ibid: 2014).

From the interviews, the findings from the secondary sources were somewhat confirmed although only for a handful of western donors. WED5 (environment ministry) admitted that there could be some allocation inefficiencies arising from the federal structure of their government, wherein regional governments had priorities that were often not in line with the central ones. Different ministries within the donor country often dealt with climate aid and there are no feedback loops between the different departments leading to administrative inefficiencies. WED2 (environment ministry) revealed that in their country there is an ongoing atmosphere of secrecy between the different departments. Another department dealing with climate aid did not even share internally with other departments, what criteria they use for their financing decisions. Therefore, from the interviews, it became somewhat apparent that differences in priorities across different ministries dealing with climate aid often created conflicts within the donor.

The issue is not just differences in objectives like poverty reduction or geostrategic considerations between the different ministries but also about ministries that work with relevant countries. To be efficient, it would make sense entrust the task to allocate mitigation aid via the ministry or agency that works with the relevant countries for mitigation (such as emerging economies). If donors do not have a clear separation on such a basis and all the ministries are engaged in the same type of activities (as we see in the case of climate change) but in different countries (some of which may not be good locations for mitigation), then there is little room for efficiency gains since they are constrained to work with those particular set of countries.

3.6.2 Strategic Priorities of Donor Institutions

Partner countries

While a proper targeting criterion for measuring cost-effective mitigation opportunities is essential, in some cases, when donors partner with middle-income countries, it can be seen as a rough indicator of whether donors are concerned about reducing emissions cost-effectively (Bagchi et al., 2016). However, some donors are actually withdrawing their aid from middle-income or transitioning to new kinds of cooperation with them. In past few years, the UK for instance, has withdrawn most of its aid from emerging economies like India, China, South Africa, Indonesia, etc. Notwithstanding this move, to meet its strategic priorities, UK continues to cooperate with Indonesia on climate change related issues by focusing their aid program only on climate change, which is an area of mutual interest (ICAI, 2016). Then there are countries like Sweden which choose to focus on bilaterally helping poor countries in places like Africa to adapt to the effects of climate change (Government of Sweden, 2009). Similarly, for development cooperation, countries like Canada, Ireland, Belgium, have a focus on poorer countries, especially in Sub-Saharan Africa. For instance, Canada says that its climate aid will be used to support climate change adaptation and mitigation programs, prioritizing the most vulnerable countries, such as small island developing states, Africa, and the least developed countries (Government of Canada, 2016). Countries like New Zealand and Australia prioritize their ties to the Pacific Islands. A recent Oxfam report was actually critical of New Zealand's mitigation aid to the Pacific nations. Taking a normative viewpoint, the report claimed that the New Zealand needs to spend less on solar projects to lower emissions in the Pacific Islands because ironically these are the countries with least responsibility for climate change and need more money for adaptation rather than mitigation (OXFAM, 2016).

Some countries however, have an explicit focus on working with emerging countries for climate change mitigation. An example is that of Denmark, which states:

> *"Mitigation activities will mainly be focused in the emerging economies where mitigation purposes are most cost efficient and potentially most impactful. Interventions mainly targeting adaptation purposes will be focused in poor countries - mainly in Africa - which are most vulnerable to consequences of climate change."* (DANIDA, 2016 p.5)

Germany also has an explicit focus on emerging economies for its development cooperation in climate change related issues. Its development cooperation ministry, BMZ (2018a) states that economically and politically rising G-20 members Brazil, China, India, Indonesia, Mexico, and South Africa, are important partners for German development cooperation, especially for the protection of global public goods. The BMZ is working with these partners to help expand their renewable energy capacities owing to their significant mitigation potential (BMZ, 2018c). These findings are actually contrary to the previously set expectation that development ministries only focus on poor countries.

The interviews revealed interesting variations. Among the western donors for instance, the middle-income focus was relevant for WED1. According to them, their priority was financing the big emitters. In the words of WED1:

> *"Basically, it is the big emitters and sometimes the countries that play a central role in the negotiations and so on."* (WED1b, Aid Implementing Agency 2017)

WED5 (environment ministry) however, acknowledged that they financed 14 of their ex-colonies out of which 13 were LDCs.

Among the non-European donors, cost-effectiveness of mitigation was not driving their aid allocation decisions. For instance, NEU1 (ministry of foreign affairs) and NEU2 (ministry of foreign affairs) are financing renewable energy projects in partner countries, which are mostly islands with very little current emission reduction opportunity. Both donors claimed that they chose to partner with countries that are close to them geographically as well as with whom they had existing partnerships.

Existing partnerships were relevant for Nordic donors as well. For instance, ND1 (ministry of foreign affairs) claimed that they were restricted to work with only a few countries because they were a small country that did not have embassies worldwide. This prevented them from setting up new mitigation projects where they did not have any prior engagements. Furthermore, they also phased-out middle-income countries as their development cooperation partners since they wanted to focus specifically on poor countries to help with their bilateral assistance and as part of a political decision on account of shortage of staff to work in these countries. ND1 also said that since emerging economies like India and China are going through rapid changes, aid might not even help anymore.

The findings from the interviews reveal that apart from cost-effectiveness, several considerations drive donors' choice of partner countries. These were driven by either path dependency (donors were unwilling to change existing and reliable aid implementation partners) or by other strategic

considerations such as maintaining influence over a certain region or trying to realize efficiency gains unrelated to the abatement potential of a country.

Promotion of Business Interests and Leveraging Private Climate Finance

The role of business interests in affecting mitigation aid allocation varied across donors. Most donors clearly accept that one of the objectives of their mitigation aid is promoting their business interests as well as leveraging climate finance. According to Whitley (2013), a significant amount of public climate aid is supporting investment by industries based in donor countries to developing countries. All public climate aid from Japan, which supports the private enterprises in developing countries, use Japanese technology and hence, directly benefits Japanese firms (ibid: 2013). Countries like the UK had pledged that they would provide $2.4 billion in climate finance after COP15 with a special focus on creating new partnerships with the private sector (Government of UK, 2012). An Oxfam report also states that most of the benefits from New Zealand's aid are actually profiting their domestic companies (Oxfam, 2016).

Among the Nordic donors, ND2 (environment ministry, 2017) claimed while they do not directly link their business interests and mitigation aid, some synergies happen, nonetheless. More specifically, ND2 said:

> *"We focus on how we are most effective in what we do, because we are a tiny country. That as I said, we are focusing on the areas of expertise we have but that also coincides with national business interests. Let's talk about an example - If we are doing district heating in Mexico, then you know, often, we would be asked - you know we are interested in doing this, do you also know anyone who would have the hardware and then we*

give them the information.... Although we don't make a link specifically, we also know there will be a business interest." (ND2, environment ministry)

Leveraging and mobilizing climate finance with aid money is an important motivation for most donors. Pauw (2017) studied such donor motivations and came to the following findings: For Canada, EU, Japan, US, New Zealand and Norway, the primary motivation to mobilizing and leveraging private sector financing was meeting the 100 billion dollar target promised in Copenhagen in 2009. Japan had the additional motivation of financing scale projects through private investments while EU, New Zealand and Norway wanted to limit temperature rise to 2 degrees centigrade. Australia claims that it focuses on using public funds to leverage far greater private sector flows to assist developing countries to undertake mitigation and adaptation action (Biennial Report, 2015). Leveraging private finance is also crucial for the UK government. Take the example of the UK government's mitigation project on "Capital Markets Climate Initiative." In their ICF business case, they clearly assert that:

"In order to support low carbon, climate resilient development; it is vital that we use public resources to leverage private investment" (Government of UK, 2013).

Evidence from the interviews revealed that leveraging private climate finance was a common motivation for almost all donors with one or two exceptions. WED4 (environment ministry) said that while leveraging climate finance was not one of its objectives yet, governmental talks were revolving around making it one. Another WED donor answered that the most important criterion is to see if it is taking up a role that is already being done

by the private sector and also whether it can harness the interest of the private sector to invest more. In the words of WED1,

> *"Creating leverage is important – i.e. how much private climate finance is being mobilized from the requested project*" (WED1b, aid agency).

Promoting business interests and leveraging on its own may not be the main problem leading to inefficient allocation. But if it encourages donors to invest in countries to invest in places where there are not many mitigation opportunities or in project types that are profitable but not efficient simply on the basis of business interests or leveraging, it may lead to the wastage of valuable financial resources. Moreover, promoting business interests and leveraging finance often clashes with the social welfare maximisation objective of development aid, since the former is driven by a profit maximisation motive. Reconciling these two objectives with one instrument – aid – may lead to the situation where neither objective is met or both objectives met only halfway.

3.6.3 Public Expectations

As discussed in the theoretical section, expectations from the public may be relevant for the efficient allocation of mitigation aid mainly because they might not be aware of how an efficient allocation of climate aid should be and pressurize the governments to prioritize allocation to poor countries or they may want the money to be spent domestically. When questioned by the public in the UK about why the government is spending on climate change when there are so many domestic difficulties and where the aid money can be used, the Secretary of State for International Development said that it is UK's interest to finance mitigation in emerging economies where emissions are expected to grow the fastest, and most efficient to tackle global problems such

as deforestation and carbon emissions (Gray, 2012). ICAI (2014) reveals that UK's ICF allocates mitigation aid mainly to middle-income countries, on the basis of efficiency considerations. In fact, they found ICF's targeting of countries with its funds to be rather appropriate, showing consistency between government rhetoric and deeds.

With regard to reacting to public pressure, in the interviews most donors said that they were resistant to such pressure. Some of them do try to engage with the public to explain their decisions on funding climate change. They do so by either holding annual meetings with the general public or including representatives from NGOs in their delegations to the UNFCCC negotiations. They try proactively engaging with all stakeholders to explain what they do with their aid flows, what results they achieve and what is the future outlook of their aid strategies (WED1a, ND1, NEU2).

3.7 Discussions and Conclusion

This chapter's main aim was to understand what criteria donors use to allocate their mitigation aid and whether they correspond to the notion of cost-effectiveness. It further identified the causes of inefficiencies in donors' mitigation aid allocation on the basis of which a theoretical framework was built. The framework was empirically analyzed using secondary sources of information and semi-structured interviews.

The findings show that some donors have explicit cost-effectiveness criteria. A few bilateral donors also prioritize allocating mitigation aid to middle-income countries that are often good locations for cost-effective mitigation of GHGs. However, they still face certain constraints reducing efficient allocation of mitigation aid. Firstly, internal coordination issues and

differences in priorities may hamper efficient allocation. Secondly, donors may have certain strategic priorities, which often led to reduction in allocation efficiency. Such priorities may be related to donors directing aid to partner countries with low abatement potential simply on the basis of existing ties or prioritize business interests and leveraging of climate finance over choosing cost-effective project types or locations. Lastly, contrary to expectations, public pressure to allocate mitigation aid to poor countries do not substantially affect donors' allocation efficiency.

Apart from trying to understand whether cost-effectiveness contributes to mitigation aid allocation decisions, this analysis also introspects a bit deeper into the issue of financing the global public good of mitigation (which benefits everyone, irrespective of who the recipient is) using development aid money (whose original purpose is to cater exclusively to the needs of the recipient). To this end, information from the interviews was used again. Three main perspectives came up in this regard: 1) Some donors considered mitigation aid to be "help" for the developing countries, irrespective of the fact that it was addressing a global public good. They insisted that developing countries "needed" mitigation aid to either draw in more FDI or build clean energy infrastructure (i.e. for the co-benefits associated with mitigation aid). 2) Only one out 15 donors interviewed said that *need* was more relevant for adaptation than mitigation; 3) Some donors, especially Nordic ones were concerned that efforts to mitigate within their own borders will not be sufficient to reduce climate change. Another donor further opined that climate change was going to harm developing countries more than the developed countries so it makes sense for them to mitigate it now with the help of mitigation aid.

Future research could study the criteria used for adaptation aid, or recipient political economies that may affect the efficiency of climate aid disbursements. Studies can also concentrate on how to improve the ex-post results of climate finance, i.e. how effectively the resources have been used after allocation.

As with most qualitative studies, there are some limitations in this study. Non-generalizability of these results owing to a small sample size and a somewhat selective representation of the results are admittedly important constraints. The most important constraint in this study, however, was that owing to strict confidentiality requirements, it was not possible to identify or name the donors. Neither was it possible to understand whether donors' who claim to use the cost-effectiveness criteria to allocate mitigation aid, actually use them? Moreover, what are the other drivers of mitigation aid and are these drivers different from other development aid or adaptation aid? Answering such open questions is possible using a quantitative approach and the next two chapters aim to do precisely that.

Appendix A

A.1 Interview guide: Do donors allocate climate related aid cost-effectively? – An empirical analysis of donor behavior

Interview Type: Semi-structured individual interviews (face-to-face, phone - telephone and Skype - and email interviews)

Interview subjects: Aid officials and representatives of major donor governments and agencies as well as experts on climate related aid.

Introduction

This interview is for a research project on climate related aid at the University of Zurich. We are interested in how climate related development assistance could be allocated most effectively. For this reason, we collect information on what criteria donors follow when they decide about climate change mitigation and/or adaptation projects.

If you have any questions or concerns regarding the interview of the project, please do not hesitate to contact me (Chandreyee Bagchi) at chandreyee.bagchi@pw.uzh.ch.

0. Question about confidentiality

I do not think that any of my questions will be politically sensitive in any way. But just in case, please let me know whenever there is any of your answers that you would prefer to remain confidential between us, or not put in context with your name or institution.

Would you agree to me recording this interview, so that I can transcribe it later?

1. General questions

1.1 Are you involved in the decision-making processes on climate related aid?

1.2 If yes, what is your role in the decision-making processes?

1.2. If no, how did you observe these processes?

2. Questions on the selection criteria for climate related projects (both adaptation and mitigation)

2.1 When you receive a proposal for funding a mitigation project, how do you decide whether or not to fund it?

2.2 Do you have any specific considerations when you decide whether to or not fund adaptation projects?

2.3 Is there any documentation for the criteria your institution uses for funding:

i) General development aid projects?

ii) Climate change adaptation projects?

iii) Climate change mitigation projects?

2.4 Could you kindly send me the documentation?

3. Questions on the derivation of the different selection criterion

3.1 How were these criteria for allocating funds for different mitigation and adaptation projects derived?

3.2 Do you see room for improvement of the criteria that are currently applied, or room for improvement in the way such criteria are derived?

3.3 If yes, what kind of improvements would you suggest?

4. Questions on public expectation and institutional incentives

4.1 Do you face any constraints on your decisions if you do decide to allocate climate aid differently in comparison to other development aid?

4.2 If yes, what are they?

4.3 Do expectations about the usage of climate related aid from the public or from NGOs have an influence on your aid allocation decisions?

5. Questions on differences among donors (multilateral and bilateral)

5.1 Do you perceive any differences between the different bilateral donors in terms of criteria? Or between multilateral and bilateral donors?

5.2. Do you have an opinion on whether either of them have any comparative merits?

6. Justification for the use of development aid for the purpose of mitigation

6.1 Given that climate change mitigation is a global public good and the benefits accruing from it are often more global than local, how do you view the use of development aid for this purpose?

6.2 What incentives do developing countries have for accepting aid for a global public like climate change mitigation?

7. Other potential experts

7.1 Could you recommend to me other experts with experience of working on the issue of climate related aid who could also provide me with their views and recollections on these issues?

Thank you very much for your time. I will send you a copy of my notes from this interview, so that you have the opportunity to make corrections or comment on them if you wish.

A.2: GCF Project Selection Criteria

1. Impact Potential - Potential of the programme/project to contribute to the achievement of the Fund's objectives and result areas.

2. Paradigm shift potential - Degree to which the proposed activity can catalyze impact beyond a one-off project or programme investment.

3. Sustainable development potential - Wider benefits and priorities, including environmental, social, and economic co-benefits as well as gender-sensitive development impact.

4. Responsive to recipients' needs - Vulnerability and financing needs of the beneficiary country and population in the targeted group.

5. Promote country ownership - Beneficiary country ownership of and capacity to implement a funded project or programme (policies, climate strategies and institutions).

6. Efficiency & effectiveness - Economic and, if appropriate, financial soundness of the programme/project, and for mitigation-specific programmes/projects, cost-effectiveness and co-financing.

Chapter 4

Does Efficiency Matter in Climate Aid Allocation? A Political Economic Analysis

In the previous chapter, an attempt was made to understand whether donors are adopt specific criteria to allocate mitigation aid and identify the various political factors impeding the efficiency of allocation. However, in a qualitative setting, it was not possible to identify whether donors who claim to use efficiency criteria to allocate their mitigation aid on the basis of cost-effectiveness are actually using them in practice. The purpose of this chapter, therefore, is to examine the extent of potential inefficiencies in climate aid allocation using a quantitative approach. It is based on collaborative work with Katharina Michaelowa and Paula Castro (see Bagchi et al. 2016).

4.1 Introduction

In this chapter, information on donor's allocation criteria gathered from the interviews and secondary sources, is linked to empirical reality by adopting a quantitative perspective of donors' climate aid allocation. This is done comparing the correlates of mitigation aid and adaptation aid to see if their drivers are indeed different, i.e. is the former allocated on the basis of a recipient country's abatement potential and the latter on the basis of neediness.

As already discussed in the previous chapter, the fact that mitigation aid addresses a global public good and adaptation aid, a more local public good, has consequences for how both types of aid should be allocated. When donors allocate their mitigation aid to places where it can be used most efficiently, they could be misunderstood as lacking an orientation towards recipient needs if one does not account for the global public good characteristic of mitigation. This chapter aims to expand our understanding of how the current aid allocation literature is insufficient to analyze aid flows for mitigation, which is a global public good. Moreover, it also investigates and compares the drivers of both, adaptation and mitigation aid. The rest of the chapter is structured as follows: Section 4.2 provides an overview of the extant aid allocation literature. Section 4.3 presents the empirical evidence on the basis of conceptual considerations and the allocation criteria discussed in chapters 2 and 3, respectively. Section 4.4 draws the conclusions.

4.2 The Aid Allocation Literature

The aid allocation literature has been a vast field of research questioning and assessing the motives of donors' contributions since the early 1970s (e.g., Abbott, 1970, p. 1216). Holding donors accountable for their motives is relevant since ultimately, such motives are crucial for the effectiveness of aid. When aid is allocated on the basis of donor interest (e.g., for geopolitical or commercial reasons), rather recipient need, it reduces the effect aid could otherwise have on its generally supposed primary goal, namely economic development and the reduction of poverty in the world. Kilby & Dreher (2010) as well as Dreher et al., (2013) provide clear empirical evidence that indeed, aid allocated on the basis of donor interest is less effective. Mckinlay (1978) and Mckinlay & Little (1977, 1979) were the first to establish the theoretical distinction between a donor interest and a recipient need model of aid allocation, and to econometrically assess bilateral donors' aid allocation

along these lines. A comprehensive review of the aid allocation literature until the mid-2000s is provided by Doucouliagos & Paldam (2009) who find that across the different studies they assess, notably GDP per capita (the central indicator of recipient need) has a very robust effect, but this effect is small leaving ample room for a variety of other motives. Generally, most studies find evidence for both donor interest and recipient need, to varying extents depending on the donor and on the period observed (less geopolitical motives after the end of the Cold War). Maizels & Nissanke (1984), Frey & Schneider (1986), Grilli & Riess (1992) and Neumayer (2003) extended the analysis to multilateral donors.

More recent studies have confirmed the earlier findings using improved econometric estimation techniques that reflect the two-or even three-dimensional panel structure of the data as well as censoring (no negative aid can be observed) and selection effects (e.g., Gang & Lehman, 1990; Trumbull & Wall, 1994; Berthélemy & Tichit, 2004; Berthélemy, 2006).

Since the mid-2000s, a special strand of the literature has focused on aid allocation to reward or encourage donor-friendly voting in the United Nations General Assembly (Carter & Stone, 2015) or during temporary membership in the United Nations Security Council (Voeten, 2001; Lai & Morey, 2006; Kuziemko & Werker, 2006; Eldar, 2008; Dreher et al., 2008, Dreher et al., 2009; Dreher & Sturm, 2012). Other scholars also examined how multilateral donors' aid allocation was influenced by important member countries, notably board members (Barnebeck et al., 2006; Fleck & Kilby, 2006a; Kilby, 2006; Kaja & Werker, 2010). Moreover, donors were accused of allocating more aid to multilateral organizations when domestic groups benefited from it (McLean, 2015). Some studies also focus on the influence of domestic politics and lobbying in the donor country (Anwar & Michaelowa,

2006; Fleck & Kilby, 2006b; Tingley, 2010; Dreher, et al., 2015b; Dietrich, 2016, and another strand of the literature analyzes the so-called "new donors" like China or India and examine how their aid allocation differs from the more traditional donors (Dreher et al., 2011; Fuchs & Vadlamannati, 2013; Dreher et al., 2015, Dreher & Fuchs, 2016).

Among the various developments of the aid allocation literature over time, the conceptual addition of recipient merit as a third category providing an additional motive in line with 'good donorship' is the most important one in the context of this analysis. Just as for aid allocated in response to recipient merit, donors' intention to invest aid where it can be used most efficiently could be misunderstood as a lack of orientation towards recipient needs if characteristics depict cost-effectiveness is not taken into account by the literature. What does this discussion imply for the different donors?

4.3 Exploring Average Donor Behavior

The findings in chapter 3 indicate that some donors have started considering different efficiency criteria for allocating their mitigation aid. These findings are in line with Buchner et al. (2012) who describe donors' different monitoring and evaluation frameworks that frequently include considerations of projects' emissions reduction potential and cost-effectiveness. However, are they actually implementing the criteria they claim to use?

Based on the discussions in chapter 2, a purely development-oriented donor should provide mitigation aid and adaptation aid to quite different places. Since mitigation aid should be allocated to emerging economies, in the traditional framework of the aid allocation literature, all aid flows to better-off countries tend to be interpreted as an expression of donor interest. To avoid this premature conclusion, it is necessary to find appropriate indicators to

control for the effectiveness of the mitigation aid allocation. Such indicators could reflect CO_2 emissions, the predominance of dirty industries, and the like. Alternatively, it is possible to follow the argument made in the previous chapter that the private market tends to find the efficient opportunities most easily so that the CERs issued in the context of the CDM (or other CDM-related variables) could provide us with a measure for countries with a high emission reduction potential.

In the following section, to what extent donors actually differentiate between mitigation and adaptation aid when they make their allocation decisions is examined. Separate models were estimated for mitigation aid, adaptation aid, and overall aid. Then comparisons between donors' allocation behavior have been made, both from the perspective of the traditional aid allocation literature and from a perspective that takes into account the specificities of mitigation aid, addressing a global public good. Readers should be reminded, however, that even if mitigation (i.e., the provision of a global public good) is the main purpose of a project, there are usually some local co-benefits. A country receiving financial flows from mitigation aid may benefit, for example through the creation of additional jobs, or through increased energy efficiency that will make its industries more competitive. In fact, as revealed in the previous chapter, donors actually argue that developing countries need such mitigation aid for the co-benefits. This consideration may dilute the analysis to some extent.

In this chapter, the intention is not to analyze individual donors (which is rather the focus of the next chapter) but investigate average donor behavior. The motives of each donor are not mutually exclusive. If we observe donors being more motivated by their own interests rather than efficiency, there will be a positive correlation between mitigation aid and donor interest

variables, which will change once mitigation efficiency is controlled for. If donors do not differentiate their aid allocation according to its purpose, their aid allocation should hence, follow very similar criteria no matter whether we look at mitigation, adaptation, or overall aid. In other words, controlling for mitigation efficiency will not change the positive correlation between mitigation aid and donor interest variables.

4.4 Data

This analysis uses the available OECD/DAC data on official development assistance (ODA) for the dependent variables. In line with the aid allocation literature in general, commitments rather than disbursements are used because commitments better reflect the donors' intent (while eventual disbursements can depend, e.g., on absorption problems on the recipient side). As mentioned in chapter 2, the data on climate aid is based on the Rio markers, which allows us to differentiate between mitigation aid and adaptation aid. The data is in the form of a two-dimensional panel with recipient and year dimensions over a period of 12 years (from 2002 to 2013) for mitigation and 4 years for adaptation aid. Only aid for projects that were coded as having mitigation or adaptation as their main focus were selected in order not to enhance the difficulties that arise due to local co-benefits of mitigation that dilute the global public good character of the project.

The explanatory variables can be divided in three categories. All of them are explained in detail in the Appendix B.1, where an overview of the different sources is also provided. The first group of variables comprises the typical variables used in the aid allocation literature. GDP per capita is used to indicate recipient need. In addition, a measure for population is included since, ceteris paribus, larger countries require more support. For recipient merit, a combined measure of the Freedom House indicators for political

rights and civil liberties (with higher values indicating greater freedom) as well as an indicator of government stability is used. For donor interest, donor exports, foreign direct investment and UN voting in line with the United States have been included.

The second group of variables pertains to the measurement of mitigation efficiency. In particular, a new variable representing marginal abatement cost (MAC) has been used. MAC curves are a straightforward way to measure emission reduction opportunities with the metric of economic cost for mitigation. To reiterate information presented in chapter 3, the MACs are costs associated with the last unit (marginal unit) of emission abatement for different amounts of emission reduction. It is expected that a lower marginal abatement cost will provide a good orientation to donors who would ideally want to reduce maximum amount of emissions at given costs. The MAC measure developed by Murty (2016) is used. However, the variable suffers from the problem that it does not vary across time. Therefore, other measures to proxy for mitigation efficiency was used. These are electricity production from coal sources (% total) and CO_2 emissions per unit of production as direct measures of the scope for emission reductions. In addition, variables related to the CDM are considered. These are namely the Certified Emission Reductions (CERs) issued to projects in a given country (relative to CERs issued in all countries during the relevant year), a variable averaging this ratio across all years (to avoid noise related to the strong annual variation in these data), a dummy for the existence of a so-called 'designated national authority' (DNA) that enables developing countries to benefit from the CDM and thereby signals the countries' own interest in hosting corresponding emission reduction projects. When using the CER variables, a control for the period in which the Kyoto Protocol was operational (from 2005 onwards) was introduced because CDM projects could not be registered before this date.

The third group of variables relates to special adaptation needs that may help to increase the precision of the estimation of general needs in the case of adaptation aid (for a detailed analysis of the determinants of adaptation aid allocation, see Betzold & Weiler, 2018). While other measures were considered,[1] only a single variable, namely the share of land under 5m of elevation was included. This is because these other measures are either almost identical to the variable used or are strongly related to GDP per capita thereby creating problems of multicollinearity.

Lastly, a control for other ODA (including all other types of aid except mitigation aid) is introduced. If mitigation aid is driven more towards better-off countries than other ODA, this should become evident through a significantly positive coefficient of GDP per capita, and significantly positive donor interest variables.

4.4.1 Estimation Strategy

The estimation strategy closely follows the established standard approach in the aid allocation literature. A panel estimation method for a simple two-dimensional panel across recipients and years has been used. Donors are considered jointly in this chapter, since the intention here is not to compare individual donors but rather to understand aggregate donor behavior. The censored nature of the dependent variable is taken into account by the

[1] First, the percentage of the population living below 5m of sea level (World Bank, 2015), which, reflects the exposure of recipient countries to sea level rise was considered. Second, vulnerability component (to assess adaptation needs) of the ND-Gain country index (ND-ECI Notre Dame's Environmental Change Initiative, 2015), which measures a country's exposure, sensitivity and ability to adapt to the adverse impacts of climate change and has the advantage of varying over time was also considered. Third, measures of the relevance of agriculture for the economy as agriculture is more easily affected by climate change than other sectors of production could also have been used. Related indicators are available from the World Bank's (2015) World Development Indicators.

use of a Tobit model. Using a maximum likelihood approach, the Tobit model estimates the probability of receiving aid and the amount of aid received in the same step. This circumvents the problem of sample selection bias inherent in Probit models which, estimates both in two separate steps. The Tobit model, therefore, estimates the maximum likelihood function combining two parts simultaneously where the first part refers to the classical regression for the non-censored observations and the second part, to the probability of an observation being censored. A Tobit model can be easily combined with a random effects specification. Using recipient fixed effects would have been a relevant alternative, but this might have created an incidental parameters problem due to the short length of panel. This is because the maximum likelihood estimator (MLE) in nonlinear panel data models with fixed effects is known to be biased and inconsistent for smaller lengths of panel data (Greene, 2004). In addition, some of the relevant variation this analysis wishes to measure is cross-country and could not be assessed in the presence of recipient fixed effects (see also Dreher et al. 2011). However, year fixed effects are systematically included. They are essential as both climate aid and GDP per capita show a significant upward trend over the years, which would lead to a spurious correlation if year fixed effects were omitted. The equation to be estimated in a Tobit model with year fixed effects can be expressed as follows:

$$Y_{i,t} = \max\{0,\ x_{i,t}\beta + \delta_t + \varepsilon_{i,t}\} \quad (1)$$

where, $\varepsilon_i \sim N(0, \sigma^2)$, i stands for recipient, t for year, $Y_{i,t}$ is mitigation aid commitments per capita, $x_{i,t}$ is the vector of explanatory variables, while β is the vector of associated parameters, $\varepsilon_{i,t}$ is a normally distributed error term and δ_t is the year fixed effects. For the values of $Y_{i,t} > 0$, the allocation equation is estimated.

With Tobit models, the question always arises whether to present coefficients or marginal effects for the observed outcome variable. Coefficients can be interpreted as the marginal effects with respect to the underlying latent variable, which is unobserved when aid commitments are zero. This is a useful interpretation of the latent variable as the donors' willingness to spend (which can also be negative). This willingness is precisely what this analysis aims to focus on when assessing donor motives. Therefore, estimated coefficients are presented.

4.4.2 Empirical Results

Table 4-1 shows the results for the estimations relating to mitigation aid allocation. Model 1 includes only the variables of the standard aid allocation model. GDP per capita is negatively related to the allocation of mitigation aid just as it usually is in the standard model. An increase in GDP per capita by 1% leads to a decrease of mitigation aid by equally 1%. An increase of the population by 1% leads to an increase in mitigation aid by about 3.5%. In the standard aid allocation framework, this would be interpreted as a clear donor orientation at recipient needs.

The recipient merit variables are equally significant and point in the usual direction: Countries with better governance and political stability obtain more mitigation aid. In addition, there is some evidence for donor interest with aid being positively related to donor exports and to UN voting alignment. The effect of the latter is unexpectedly strong: A 10-percentage point increase in voting alignment leads to a doubling of aid. Foreign direct investment (FDI) is insignificant. Otherwise all outcomes resemble those of a typical aid allocation regression based on mixed donor motives combining the considerations of need, merit and interest.

However, as we deal with mitigation aid, donors interested in the effective use of their resources should not care so much for the poverty of the recipient, but about how efficiently this recipient would produce maximum emission reductions. This efficiency was expected to be positively correlated with GDP per capita and also with typical donor interest indicators such as exports and FDI. Therefore – as long as the specific mitigation efficiency variables are not included as controls – donor interest variables should have a greater positive effect than for other aid, and the effect of GDP per capita should be positive rather than negative.

Tab. 4-1: Determinants of mitigation aid

Variables	(1) Mitigation aid (log)	(2) Mitigation aid (log)	(3) Mitigation aid (log)	(4) Mitigation aid (log)	(5) Mitigation aid (log)	(6) Mitigation aid (log)	(7) Mitigation aid (log)
GDP pc (log)	-1.01*	0.29	-0.535	-0.20	-0.33	0.31	0.32
	(0.57)	(0.51)	(0.663)	(0.64)	(0.63)	(0.68)	(0.68)
Population (log)	3.48***	2.55***	2.601***	2.19***	2.30***	2.43***	2.55***
	(0.35)	(0.37)	(0.455)	(0.41)	(0.43)	(0.45)	(0.50)
Bilateral ODA (log)		1.21***	1.012**	0.81*	1.05**	0.79*	0.77*
		(0.38)	(0.444)	(0.48)	(0.42)	(0.45)	(0.46)
Civil liberties and political rights	1.27***	1.23***	1.406***	1.03***	1.20***	1.07***	1.06***
	(0.35)	(0.30)	(0.347)	(0.33)	(0.33)	(0.34)	(0.34)
Political stability	1.34*	1.26**	1.240*	0.87	0.98	0.96	1.03
	(0.70)	(0.61)	(0.675)	(0.66)	(0.65)	(0.66)	(0.67)
Exports (log)	0.17*	0.18**	0.18**	0.04	0.13	0.13	0.13
	(0.09)	(0.07)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)
FDI	0.00	-0.00	0.0944	0.03	0.08	0.10	0.10
	(0.02)	(0.02)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)
UN voting with USA	10.33***	7.94***	5.790*	4.64	5.16*	5.63*	5.69*
	(2.83)	(2.67)	(2.96)	(3.10)	(2.85)	(3.05)	(3.05)
DNA dummy				4.35***	3.37***	3.44***	3.47***
				(1.00)	(0.95)	(0.99)	(0.99)
MAC (log)				-0.42			
Electricity from coal					0.03*	0.05**	0.05**
					(0.02)	(0.02)	(0.02)
Kyoto operational						7.46***	7.42***
						(1.70)	(1.70)
CERs						-2.64	
						(5.21)	
CO_2 emissions per GDP						-0.09	0.04
						(2.57)	(2.57)
CO_2 emissions pc						-0.27	-0.28
						(0.17)	(0.17)
CERs (mean)							-7.44
							(10.85)
Log likelihood	-3995.9	-3953.9	-2667.5	-2202.2	-2660.5	-2410.0	-2409.9
Observations	1,443	1,408	888	721	888	809	809
Number of left censored observations	473	438	198	131	198	188	188
Number of uncensored observations	970	970	690	590	690	621	621
Number of recipients	134	134	85	67	85	85	85

Standard errors in parentheses; constant and year fixed effects included, but not shown. Note that differences between regression 2 and 5 are not driven by the reduction in the number of observations, see regression 3.

In the presence of the local co-benefits, the negative coefficient of GDP per capita does not exclude that donors also care for mitigation efficiency. What should be observed in this case is a coefficient that is at least less negative than for other development assistance. To analyze the difference with respect to other aid, the Model 1 is re-estimated including a further control for other ODA (Model 2) to see if mitigation aid is driven more towards better-off countries than other ODA.

Only very limited evidence was found for this. Mitigation aid seems to closely follow other aid in its allocation. Controlling for other aid, the coefficient of GDP per capita is not significant any more suggesting that mitigation aid is neither more nor less directed into poor countries than any other type of aid. However, exports and also UN voting alignment remain clearly significant. Within the traditional framework of aid allocation this would be interpreted as mitigation aid being somehow more strongly driven by donor interests than other aid.

Whether this interpretation is correct or not is assessed by adding specific indicators for mitigation effectiveness in the following equations. In Model 3, the dummy for the existence of a designated national authority in the recipient country is added. As explained above, this DNA had to be set up by all countries that intended to participate in the generation and trade of CERs. More importantly, the measure for MAC was also introduced. What can be observed from the result is that the existence of a DNA leads to an increase in mitigation aid by a factor of 4.4. The results for the MAC are not significant. However, a loss in significance of exports is observed indicating that there might have been a reduction in donor interest once controls for mitigation efficiency are introduced. Unfortunately, this reduction of significance in the export variable is driven by the loss of observations.

Moreover, the MAC variable does not vary across time. Therefore, in the next models, other variables reflecting mitigation efficiency of recipients have been used. For instance, the percentage of electricity produced from coal was included in addition to the DNA dummy. Both are positively and significantly related to mitigation aid. Having a DNA leads to an increase in mitigation aid by a factor of almost 3.5, and an additional percentage point of electricity produced from coal leads to a rise in mitigation aid by 3%. The consistently positive and substantive effect of having a DNA can be explained by the fact that a government will incur the cost of setting up and running a DNA only if it perceives that the country can offer attractive opportunities for the CDM. The existence of a DNA can therefore, be interpreted as a signal of efficient mitigation options. DNAs may also directly support the identification of efficient mitigation projects in the respective countries, which can then be funded either through the carbon market or through more traditional aid (Figueres 2004: 11).

The additional mitigation-related variables considered in Models 4 and 5 do not turn out to be significant, except for the control variable for the Kyoto Protocol being operational. This is also the case if when these variables are introduced individually, and instead of the two variables discussed above (not shown). As the generation of CERs could have provided a rather easy orientation for donors to figure out where efficiency would be high – almost as easy and, in fact, more informative than the mere existence of a DNA – the results suggest that donors have not fully started allocating their mitigation aid on the basis of cost-effectiveness.

Yet, to some extent, they have, and this is enough to explain the previous result for export-related donor interests. The inclusion of the mitigation-related variables in Models 3-5 leads to a drop in the coefficient of

donor exports by about one third, and this coefficient is no more significant.

The conclusion that can be drawn from this is that the traditional aid allocation model led to a misinterpretation of the initial equation: Once appropriate controls for mitigation efficiency are included, mitigation aid does not appear to be driven by donors' export interests any more. Regarding donor interest, only the coefficient on voting alignment still remains high and significant. It is outside the scope of this study to explain why the relationship with UN voting is so much stronger for mitigation aid than for other aid.

Next, a more direct comparison of mitigation aid, adaptation aid and general aid is presented. Table 4-2 first replicates Model 1 from the previous table, and then uses exactly the same set of traditional aid allocation variables for an estimation of adaptation aid (Model 2) and general ODA (Model 3). Models 4 and 5 are again for mitigation and adaptation aid, but they add some specific variables. In the case of Model 4, these are exactly the variables from the third regression of the previous table. (However, Model 4 does not include other ODA as a control, since the contrast between mitigation aid and general ODA in Table 4-2 is possible directly through the comparison across equations). In Model 5 the percentage of the land area with an elevation of 5m or less above sea level, as a special indicator for adaptation needs is included.

In line with the previous results, the comparison of the standard model for mitigation aid and the standard model for general ODA shows that the effect of GDP per capita is virtually identical. Differences appear in the stronger role of recipient merit and donor interest. However, as before, the significance of donor exports disappears when the special variables for mitigation efficiency are taken into account. Moreover, the coefficient of GDP

per capita drops substantially for mitigation aid when the special mitigation-related variables are added in Equation 4, i.e., the positive correlation between aid and poverty becomes stronger. It should be noted, however, that the latter is primarily driven by the different set of observations as the number of observations drops substantially when adding the additional controls.

Adaptation aid also shows a stronger recipient merit orientation than overall aid, but primarily, there is a striking difference in the effect of GDP per capita – with a coefficient more than three times as high in absolute terms as for mitigation aid (which makes sense when considering that mitigation efficiency is not positively related to poverty), but also for overall aid (which makes less sense since both should, in principle, be equally poverty oriented). This does not change when adding the additional indicator for adaptation needs in Equation 5. These results suggest that for adaptation aid, donors take recipient need much more seriously than for general aid. At the same time, there is no whatsoever indication of an effect of donor interest. FDI is significant, but not in the direction in line with a donor interest orientation: The greater the FDI inflows, the lower adaptation aid. If anything, this provides additional evidence for the role of recipient need. Generally, the results for adaptation aid are in line with those by Betzold & Weiler (2018) who focus on this particular topic.

Tab. 4-2: Comparing aid types

Variables	(1) Mitigation aid (log)	(2) Adaptation aid (log)	(3) Bilateral ODA (log)	(4) Mitigation aid (log)	(5) Adaptation aid (log)
GDP pc (log)	-1.01*	-3.66***	-0.93***	-2.02***	-3.68***
	(0.57)	(0.72)	(0.27)	(0.73)	(0.71)
Population (log)	3.48***	2.21***	0.85***	3.41***	2.50***
	(0.35)	(0.45)	(0.15)	(0.48)	(0.47)
Civil liberties and political rights	1.27***	1.23**	0.14	1.25***	1.18**
	(0.35)	(0.49)	(0.14)	(0.41)	(0.48)
Political stability	1.34*	1.26	0.32	1.27	1.25
	(0.70)	(1.10)	(0.24)	(0.79)	(1.09)
Exports (log)	0.17*	0.08	-0.03	0.12	0.09
	(0.09)	(0.11)	(0.04)	(0.11)	(0.11)
FDI	0.00	-0.07*	-0.00	0.07	-0.07*
	(0.02)	(0.04)	(0.01)	(0.07)	(0.04)
UN voting with USA	10.33***	0.51	0.94	6.94**	0.28
	(2.83)	(4.13)	(0.88)	(3.18)	(4.09)
DNA dummy				2.47**	
				(1.01)	
Electricity from coal				0.04*	
				(0.02)	
Land area<5m					0.09*
					(0.05)
Log likelihood	-3995.96	-1218.08	-3627.56	-2699.10	-1216.25
Observations	1443	395	1443	921	395
Number of left censored observations	473	85	35	231	85
Number of uncensored observations	970	310	1408	690	310
Number of recipient countries	134	132	134	85	132

Standard errors in parentheses; constant and year fixed effects included, but not shown. Here, the drop in the sample size in Regression 4 makes up for most of the difference with Regression 1.
*** p<0.01, ** p<0.05, * p<0.1

However, the available data for adaptation aid cover only four years. Some of the insignificant results may thus be driven by the relatively small number of observations and / or by a generally stronger need-orientation in recent years.

Table 4-3 confirms this suspicion. It replicates Table 4-2 but with all time-series starting only in 2010. Exports lose significance throughout, and the negative relationship between GDP per capita and aid flows is stronger than before for mitigation aid and total ODA. Yet, the absolute value of the coefficient for GDP per capita is still substantially higher for adaptation aid. When comparing mitigation and adaptation aid once mitigation specific efficiency variables are controlled for, there is no apparent difference with respect to recipient merit and donor interest, apart from the surprisingly strong and robust effect of UN voting alignment for mitigation aid. The main effect remains in the role of GDP per capita. This difference is in line with the different character of the two goods: mitigation as a global public good for which the neediness of the project location should only matter with respect to local co-benefits, and adaptation as a private or local public good where the neediness of the location directly drives the relevance and the efficiency of the intervention.

Tab. 4-3: Comparing aid types, restricted samples: 2010 – 2013

Variables	(1) Mitigation aid (log)	(2) Adaptation aid (log)	(3) Bilateral ODA (log)	(4) Mitigation aid (log)	(5) Adaptation aid (log)
GDP pc (log)	-1.90***	-3.66***	-1.69***	-2.21***	-3.68***
	(0.65)	(0.72)	(0.39)	(0.85)	(0.71)
Population (log)	2.37***	2.21***	0.90***	2.24***	2.50***
	(0.41)	(0.45)	(0.24)	(0.56)	(0.47)
Civil liberties and political rights	1.49***	1.23**	0.17	1.56***	1.18**
	(0.44)	(0.49)	(0.24)	(0.50)	(0.48)
Political stability	0.64	1.26	-0.08	-0.75	1.25
	(1.00)	(1.10)	(0.54)	(1.10)	(1.09)
Exports (log)	0.04	0.08	-0.05	-0.00	0.09
	(0.10)	(0.11)	(0.06)	(0.12)	(0.11)
FDI (% GDP)	-0.09***	-0.07*	-0.01	0.06	-0.07*
	(0.04)	(0.04)	(0.01)	(0.10)	(0.04)
UN voting with USA	1.65	0.51	0.25	-1.27	0.29
	(3.62)	(4.13)	(1.63)	(4.20)	(4.09)
DNA dummy				4.14**	
				(1.97)	
Electricity from coal				0.06**	
				(0.03)	
Land area<5m					0.09*
					(0.05)
Log likelihood	-1227.76	-1218.08	-1028.88	-772.52	-1216.25
Observations	395	395	395	252	395
Number of left censored observations	65	85	14	34	85
Number of uncensored observations	330	310	381	218	310
Number of recipient countries	132	132	132	84	132

Standard errors in parentheses; constant and year fixed effects included, but not shown.
*** p<0.01, ** p<0.05, * p<0.1

4.5 Conclusion

This chapter has demonstrated the empirical problems that the traditional aid allocation literature faces when aid addresses climate change mitigation. Mitigation of climate change is non-excludable and therefore, drives a wedge

between the location where the project is implemented, and the location where the benefits arise. Hence, to be effective, mitigation aid should not flow to places with the greatest needs, but to places where these needs can be served best through an efficient provision of this global public good. This creates a fundamental conceptual problem for the aid allocation literature and the related effort to hold donors accountable for their motives and, eventually, for the effectiveness of their aid. Donors allocating their aid in line with criteria suggesting the efficiency of mitigation projects will be wrongly accused of allocating aid in their own interest, specifically with respect to donor exports (which are positively correlated to the criteria of efficient mitigation). The misunderstanding is based on an omitted variable bias that disappears when variables accounting for mitigation efficiency are included in the model. This analysis finds that donors do not very clearly differentiate their mitigation related aid allocation criteria from the criteria for general ODA leading to reduced allocation efficiency.

Since this chapter is based on aggregate aid flows from donors, it is not possible to distinguish between individual donors. It is quite probable that some donors are more efficient than others. Such nuances between individual donors are hidden in this analysis with aggregate aid flows. Therefore, in the next chapter, individual efficiency of donors allocating mitigation aid is empirically investigated using a 3-dimensional panel model with the added donor dimension. The focus there is only on mitigation aid rather than adaptation aid since it is addressing a global public good and therefore, not following the normally assumed objectives of development aid.

Appendix B

Table B.1: Variable description and sources

Categories	Variable	Definition	Mean	Std. Dev.	Min	Max	Source
Aid commitments	Mitigation aid (log)	Log of climate change related ODA for the primary purpose of mitigation (2012 constant prices, USD millions)	14.00	10.12	0.00	28.71	OECD (2015)
	Adaptation aid (log)	Log of climate change related ODA for the primary purpose of adaptation (2012 constant prices, USD millions)	4.54	8.75	0.00	26.59	OECD (2015)
	Bilateral ODA (log)	Bilateral ODA, total commitments. When this variable is used as a control in the estimations for mitigation and adaptation aid, the aid flows in the specific areas (for mitigation or adaptation respectively) are subtracted.	5.65	1.44	-0.75	10.05	OECD (2015)
Recipient need	GDP pc (log)	Log of GDP per capita (PPP, constant 2011 international $)	8.51	1.02	6.20	10.77	World Bank (2015)
	Population (log)	Log of total population of the recipient countries	15.48	2.14	9.89	21.02	World Bank (2015)
Recipient merit	Civil liberties & political rights	Average of Freedom House index of civil liberties and political rights, reversed scale (7= greatest freedom)	4.26	1.71	1.00	7.00	Quality of Government Institute (2015)
	Political stability estimate	Measures perceptions of the likelihood that a government will be overthrown by unconstitutional and/or violent means	-0.33	0.92	-3.18	1.54	Quality of Government Institute (2015)
Donor interest	Exports (log)	Exports made by donors to the recipient countries (values in '000 USD)	10.73	6.58	0.00	20.35	OECD (2015)
	FDI inward	Net inflows of foreign direct investment to the recipient county	6.07	16.22	-82.93	366.36	World Bank (2015)
	UN voting with USA	Measurement of whether a recipient country votes in agreement with the United States on important UN votes	0.38	0.18	0.00	1.00	Kilby (2011)
Mitigation efficiency	Electricity from coal	Electricity produced in recipient countries from coal sources (% of total electricity produced)	13.21	25.43	0.00	100.00	World Bank (2015)
	DNA dummy	Dummy for whether a country has a designated national authority (DNA) - which is the organization granted responsibility to authorize and approve participation in CDM projects	0.64	0.48	0.00	1.00	UNFCCC (2015)

Categories	Variable	Definition	Mean	Std. Dev.	Min	Max	Source
	CERs	Author's calculation of the proportion of the recipient country's certified emission reductions in relation to the total number of certified emission reductions generated in that year	0.01	0.07	0.00	0.80	CDM pipeline (2015)
	CERs (mean)	Author's calculation of the mean of the proportion of the recipient country's certified emission reductions in relation to the total number of certified emission reductions generated in that year	0.01	0.05	0.00	0.40	CDM pipeline (2015)
	CO_2 emissions per GDP	CO_2 emissions (kg per PPP $ of GDP)	0.30	0.26	0.04	1.94	World Bank (2015)
	CO_2 emissions pc	CO_2 emissions per capita (in metric tons)	2.90	4.30	0.03	38.34	World Bank (2015)
	Kyoto operational	Dummy for year≥2005 when the Kyoto Protocol entered into force	0.71	0.46	0.00	1.00	
Adaptation Adaptation needs	Land area<5m	Land area below 5m as the percentage of total land in the recipient countries, where the elevation is 5 meters or less.	7.04	15.91	0.00	100.00	World Bank (2015)

Chapter 5

Misinterpreted or Careless: How Do Individual Donors Allocate Their Mitigation Aid?

This chapter follows closely from the previous chapter where aggregate donors' climate aid allocation was analyzed. The results indicated that overall, donors have not yet adjusted their aid allocation decisions to cater to efficient allocation. However, it is possible that some donors are more efficient than others. Understanding individual donors' efficiency is not feasible in the two-dimensional setting used in the previous chapter. Therefore, in this chapter a three-dimensional panel model has been used to further investigate individual donors' decisions. This analysis will shed light on which donors are efficient but misinterpreted and which ones are simply careless in their allocation.

So far, the literature comparing actual donor types has been somewhat limited. A few studies focus on donor types that explain the differences in aid policies of different donors such as the European Commission or the United States (Tsoutsoplides, 1991, Schraeder, et al., 1998, Fleck & Kilby, 2001; Fleck & Kilby, 2006; Fleck & Kilby, 2010). Berthélemy & Tichit, (2004), and Berthélemy, (2006) were two of the first few empirical studies which

investigate determinants of aid allocation taking into consideration the donor-recipient pair specific characteristics in the form of a three-dimensional panel analysis. They find that typically poorer countries receive from aid but donors such as France, Japan, and the United States are egoistic and export oriented while the Nordic donors are more altruistic in their allocation behavior. There have been also studies comparing the allocation behavior of the 'old' OECD's Development Assistance Committee (DAC) donors and the 'new' non-DAC donors (Dreher, Nunnenkamp, & Thiele, 2011b) revealing that the new donors are less poverty oriented than the old ones. Some other studies have, for instance, looked at donor political ideology and how this impacts aid flows (Tingley, 2010, Brech & Potrafke, 2014; Dreher, Nunnenkamp, & Schmaljohann, 2015b). Focusing particularly on environmental aid from U.S. Agency for International Development (USAID), U.S. foundations, and a multilateral donor, the Global Environmental Fund (GEF), Lewis (2003) finds that donors allocate more aid to countries with which they already had relations, democratic countries and those with unexploited natural resources.

There has also been significant research on aggregate donor behavior, which has already been discussed in detail in chapter 4, and is therefore, not presented here. However, from the literature review, it is evident that no studies have tried to understand individual donors' decisions for the case of climate change. In addition, none of the studies have demonstrated how donors run a risk of being misinterpreted in the traditional aid allocation framework unless mitigation efficiency is controlled for. The chapter is based on joint work with Katharina Michaelowa and Paula Castro (Bagchi et al., 2016).

5.1 Empirical Approach

Each donor may follow different objectives through their allocation of mitigation aid. The varieties of motives that impede efficient allocation were already discussed in sufficient detail in chapter 3 and in the literature review section of chapter 4. Referring to the argument already made in the previous chapter, emerging economies usually have higher income and growth and are interesting markets for donor exports and FDI: hence aid flows to these countries would be understood as interest oriented and donors can be misinterpreted in the traditional framework of the aid allocation literature. Similarly, donors may not care so much about allocation efficiency of mitigation aid and simply allocate it the way they do other development aid, i.e. on the basis of need (indicated by poverty of the recipient). Therefore, in this chapter, the aim is to uncover exactly which individual donor belongs to which typology based on their motivation. Two types of donors are analyzed here:

Misinterpreted donors – These donors who seem to be motivated by donor interest, i.e. selfishness, will initially exhibit a positive correlation between mitigation aid and donor interest variables, which will change once controls for mitigation efficiency is introduced.

Careless donors - These donors do not differentiate their aid allocation depending on the purpose and may not have spent much effort in considering where mitigation aid would be most cost-effective. Their aid allocation should, hence, follow very similar criteria no matter whether we look at mitigation, adaptation, or overall aid. Careless donors may either be driven by need of the recipient (i.e. they do not care about efficient allocation of mitigation aid and prefers a poverty-based allocation) or be selfish, (i.e. controlling for mitigation efficiency does not change the positive correlation between mitigation aid and donor interest variables).

The findings from this empirical analysis can then be compared to the donors discussed in chapter 3 to understand whether donors who claim to allocate their mitigation aid on the basis of existing cost-effectiveness criteria are also the same ones that are efficient but misinterpreted in this analysis.

5.1.1 Data

The data used are similar to the data used in the previous chapter. The difference here is that the panel data has three dimensions instead of two, i.e. the donor dimension has been added to recipient and year. For the dependent variable, OECD/DAC data on official development assistance (ODA) for mitigation aid are used. Again, commitments rather than disbursement are used. Since the data structure was different here, compared to the previous chapter, some new explanatory variables (notably for mitigation efficiency) and a slightly modified econometric approach have been used in this analysis.

The first group of explanatory variables pertaining to the traditional framework is the same as used in chapter 4 with one change. Since the donor dimension has been added to this panel, the variable measuring UN voting interest now represents each individual donor instead of just the United States, as in the previous analysis. Other variables used are the same as before. These are GDP per capita, population, combined measure of political rights and civil liberties, political stability and exports from donors to recipients.

For measures relating to mitigation efficiency, similar to the approach adopted in chapter 4, a variable representing marginal abatement cost (MAC) has been used. As mentioned before, the variable suffers from the problem

that it does not vary across time. Therefore, other measures to proxy for mitigation efficiency were used. These were energy use (in kg of oil equivalent), absolute CO_2 emissions and a variable reflecting certified emission reductions (CERs) related to CDM projects in a country in a given year was also added. Also similar to the variables used in chapter 4, electricity production from coal sources (% of total electricity produced), dummy for the existence of designated national authority' (DNA) and a dummy for the Kyoto Protocol was also included.

5.1.2 Estimation Strategy

The estimation strategy is similar to that in the previous chapter but with some modifications. Here, panel estimation methods for a three-dimensional Tobit model with donor X recipient X year dimension were used. A few different steps were followed to determine the efficiency of each donor. In a first step, some models with all the donors were estimated with donor and year fixed effects. On the basis of these models, in the next step, an interaction term with donor dummies and the export term were created. Then, the export elasticities of each individual donor before and after controlling for mitigation efficiency were estimated using the seemingly unrelated regressions (SUR) approach. A SUR system comprises of several individual equations that are associated with each other owing to linkages between their disturbances (Moon and Perron, 2006). That is, although the equations may not be linked structurally, they can be linked statistically through the jointness of the distribution of the error terms, which can be explained by the structure of the SUR model and the covariance matrix of the associated disturbances. The SUR model therefore, can be used to test cross-model hypotheses in cases where the individual equations are actually related to each other but on the surface might not seem to be.

After the model estimations, Wald tests are performed to compare the coefficient estimates of the interaction terms and to see whether indeed a reduction can be observed in the size and significance after controlling for mitigation efficiency. When we observe that the difference between the two coefficient estimates of the interaction term before and after controlling for mitigation efficiency is positive and significant, the donors are classified as misinterpreted, while the rest is grouped as careless. This should give an idea of which donors are truly efficient in their allocation but misinterpreted owing to an omitted variable bias, while which ones are actually careless in their allocation. These donors were then compared to the ones in chapter 3, to see if donor rhetoric indeed matches their actions, i.e. donors who claim to use the cost-effectiveness indicator are actually using it.

The dependent variable–mitigation aid commitments–is censored at zero since countries do not receive aid from all individual donors in each year. Therefore, similar to the econometric approach in chapter 4, the censored nature of the dependent variable was taken into account by the use of a Tobit model. As already discussed in chapter 4, recipient fixed effects with the Tobit model would have been likely biased due to the small number of observations per recipient creating the incidental parameters problem. Furthermore, variation across recipients is also theoretically more important than within recipients especially for those variables that change comparatively slowly over time (Bermeo, 2017). Such variation cannot be assessed if we included recipient-specific fixed effects.

It was also possible to use dyad (donor recipient) fixed effects and year fixed effects given that we have three dimensions. However, if fixed effects were included all the three dimensions, Tobit estimates produced would very

likely, be biased due to the short time panel. Therefore, here also a Tobit with a random effects specification is used. Several other studies have also used this approach (see, for example, Berthélemy & Tichit, 2004; Nunnenkamp & Thiele, 2006). However, year and donor fixed effects are systematically included. Year fixed effects are essential as both mitigation aid and GDP per capita show a significant upward trend over the years, which would lead to a spurious correlation if omitted. Donor fixed effects ensures that any unobservable differences between the donors do not affect our estimation results.

The coefficients can be interpreted as the marginal effects with respect to the underlying latent variable, which is unobserved when aid commitments are zero. Keeping with the logic discussed in the previous chapter, the coefficients rather than the marginal effects are presented.

5.1.3 Empirical Results

Average aid allocation behavior

Table 5-1 shows the results for our estimations with respect to the allocation of mitigation aid. Model 1 is based on Equation (2) but excludes ODA. As we deal with aid for mitigation, donors most interested in the effective use of their resources should not care so much for the poverty of the recipient, but about how efficiently this recipient would produce the public good. As long as mitigation efficiency was not controlled for, mitigation aid and GDP per capita as well as donor interest variables would have a positive correlation. Conforming to the findings in the two-dimensional panel in the previous chapter, here also a negative effect was observed. Here too, the negative coefficient of GDP per capita does not exclude that donors also care for

mitigation efficiency given the associated co-benefits. Moreover, as the findings revealed in the chapter 3, donors may also try to efficient by allocating aid to their partner countries that may be poor, owing to existing relationships or be inefficient due to their aid policies prioritizing poor countries.

Models with other controls were also estimated. For instance, in Model 2 a further control for ODA was added and the results show that the coefficient of GDP per capita is not significant anymore suggesting that mitigation aid is neither more nor less directed into poor countries than any other type of aid. However, exports and also UN voting alignment remain clearly significant. Within the traditional framework of aid allocation this would be interpreted as mitigation aid being somehow more strongly driven by donor interests than other aid. Specific indicators for mitigation effectiveness were then added to assess whether this interpretation is correct in Models 3 and 4. A reduction in the significance as well as size of the export coefficient in Model 3 is observed. In Model 4, the export coefficient completely loses its significance while the UN voting variable becomes much less significant and smaller in size than before. To check whether these results are driven by a loss of observations, Model 2 is re-estimated with the same sample size as Model 4 and it can be seen that the exports coefficient remain significant in the smaller subsample (see Model 3). So, the reduction in the significance of exports in Model 4 is not entirely driven by the reduction in sample size. The reduction in the significance of UN voting, however, is driven by the loss of observations. Once mitigation efficiency concerns are controlled for, mitigation aid does not appear to be driven by donors' export interests any more.

Tab. 5-1: Average aid allocation behavior of all donors (year FE – donor FE)

Variables	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model
GDP per capita (log)	-1.929***	0.125	0.236	0.435	0.793**
	(0.00)	(0.55)	(0.41)	(0.62)	(0.02)
Population (log)	3.820***	2.513***	2.175***	2.901***	2.592***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Other ODA (log)		3.546***	3.647***	3.588***	3.688***
		(0.00)	(0.00)	(0.00)	(0.00)
Political stability	2.443***	2.710***	2.525***	2.388***	2.183***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Civil liberties and political	1.079***	0.971***	0.501***	0.305*	0.794***
	(0.00)	(0.00)	(0.00)	(0.09)	(0.00)
Exports (log)	0.477***	0.264***	0.112**	0.108	0.128*
	(0.00)	(0.00)	(0.04)	(0.11)	(0.05)
Agreement in the UN	8.916***	6.115***	9.762***	6.089*	-0.083
	(0.00)	(0.00)	(0.00)	(0.06)	(0.98)
Kyoto operational			13.823***	13.509***	
			(0.00)	(0.00)	
DNA dummy			3.889***	4.152***	
			(0.00)	(0.00)	
CERs (log)			0.314***	0.275***	
			(0.00)	(0.00)	
MAC (log)			0.322***	0.467**	
			(0.00)	(0.02)	
Energy use (in kg of oil				-1.765**	
				(0.02)	
CO_2 emissions (in kt) (log)				0.834	
				(0.21)	
Electricity from coal (% of				0.028**	
				(0.02)	
Constant	-95.388***	-89.659***	-86.185***	-75.376***	100.337**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	38,208	38,208	21,336	17,064	17,064
Year FE	Yes	Yes	Yes	Yes	Yes
Donor FE	Yes	Yes	Yes	Yes	Yes
Number of uncensored observations	3216	3216	2439	1756	1756
Number of left censored observations	34992	34992	18897	15308	15308
Log likelihood	-19185	-18567	-13402	-9729	-9770

Notes: Tobit models used for estimation

*P-value in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Note that difference between equation 2 and 4 not driven by reduction in sample size since model 5 (estimated with a reduced sample size still shows exports to be significant).*

Comparison between individual donors

Estimating these individual models presented in table 5-1 was the first step on the basis of which SUR models were estimated. As discussed in the empirical section, some donors may be more driven by efficiency concerns than others. Furthermore, when donors are actually efficient, they may be misinterpreted as being selfish. This makes it necessary to test for differences between individual donors to understand which donors are actually misinterpreted to be selfish and which ones are actually careless in their allocation. To do this, following Berthélemy (2006), the analysis focuses on the export coefficient as an important indicator of donor interest. A new explanatory variable is introduced defined by interacting a dummy for each donor with the export variable in equation 2 and 4. The aim is to test whether an interaction term with the export coefficient for every donor is significantly different from zero before and after controlling for mitigation efficiency. Tobit regressions are then estimated with the interaction term between exports and donor dummies in model 2 (no mitigation efficiency controls) and model 4 (with efficiency controls) from the previous table. Donor and year fixed effects are included.

After estimating each of these equations and storing the estimation results, STATA's *suest* command was used to examine cross-model hypothesis after which the *test* command was used to perform Wald tests. Therefore, once the SUR models are estimated, Wald tests were then performed on this interaction term to understand whether it is significantly different from zero. The results are presented in table 5-2 below. The overall result indicates that there are some differences between the individual donors. Based on the findings, classifications of donors exhibiting similar aid allocation behavior were made. Column 1 in table 5-2 presents the coefficient of the interaction term before controlling for mitigation efficiency and column 2, after. Column 3

presents the difference in the magnitude of the two coefficients presented in column 1 and 2 along with its significance level. Based on the findings in column 2 and 3, the donors are classified (in decreasing order of magnitude of the difference between the aforementioned interaction terms before and after controlling for mitigation efficiency) as follows:

Misinterpreted donors – If the values calculated in column 3 are positive and significant, donors classified as misinterpreted. This means that for these donors, before we control for mitigation efficiency, donors initially seemed to be export oriented. After introducing mitigation efficiency related controls, this interaction term then becomes loses significance completely or becomes negatively significant. Take the case of Austria. The estimations for Austria reflect a positive interaction term with donor exports before controlling for mitigation efficiency and a negative interaction term after controlling for mitigation. Furthermore, the significance level of this difference in the interaction term is also high (see column 4). However, for some donors such as Denmark and France, a reduction in the coefficient of the interaction term is observed, after introducing the controls for mitigation efficiency. The results for France, match Berthelemy's (2006) finding that it is an egoistic and self-interested donor but in this case, it is misinterpreted to be overly selfish. The results for Denmark are in contrast to his findings, because here some evidence of selfishness can be observed while in his analysis, Denmark, being a Nordic donor was classified as being altruistic.

Careless donors - Careless donors can be classified in two types. First, they can be export oriented and not care about efficiency. Second, they can be need-oriented but also not export oriented, indicated by their lack of significance of the interaction term before controlling for mitigation efficiency (in column 1) and after controlling for it (in column 2). This is clear for the

case of donors such as Canada or Ireland where the interaction term is not even significant, both before and after controlling for mitigation efficiency.

Conforming to the findings in the previous chapter, in this analysis also we see that there is significant variation among the efficiency levels of donors. Only by appropriately controlling for mitigation efficiency, this misinterpretation can be reduced. Some parallels from this analysis can be drawn to the findings of the existing literature and those in chapter 3.

Nordic donors are traditionally considered be altruistic and not driven by their selfish interests. In this analysis, Nordic donors such as Denmark was found to be overly misinterpreted, indicating that controlling for mitigation efficiency leads to the prevention of misinterpretation but does not preclude that selfish interests still exist for them. Finland, is also found to be careless. Secondly, contrasting with existing literature which finds donors like Japan, Germany, Belgium, to be driven by selfish interests (see Berthélemy 2006), this analysis actually finds them to be misinterpreted. France, similar to the case of Denmark, was found to be overly misinterpreted to be selfish rather than careless. Some donors like Australia are driven more by selfish interests rather than efficiency.

Some donors who said that they allocate their mitigation aid on the basis of cost-effectiveness and have publicly available criteria are mostly the ones that are indeed revealed as misinterpreted in this analysis. For example, Germany, Denmark, the Netherlands, Japan all have well defined criteria in terms of effectiveness of mitigation aid. An exception is Switzerland, which also claims to allocate its aid on the basis of effectiveness but is found to be careless here. Donors like Australia as identified as selfish in previous

literature and says that they do not have any separate criteria for allocating their mitigation aid, is also found to be careless in their allocation. Many donors for whom no publicly available allocation criteria with respect to mitigation aid were found in chapter 3—such as Canada, Ireland, Poland, Finland, Portugal—are the ones which are shown to be indeed careless in their allocation. Moreover, as mentioned in chapter 3, countries like Canada anyway claims that their climate aid allocation focuses on small island states or poor countries in Africa and this is clearly reflected in the quantitative analysis. These countries, due to their low abatement potential are not the most efficient location for mitigation. Clearly, considerations other than efficiency drive their allocation decisions regarding mitigation aid.

Tab. 5-2: Comparing export elasticities for individual donors

Donor	(1) Before efficiency control	(2) After efficiency control	(3) Difference in coefficients	(4) Donor characteristic
Austria	0.42**	-0.40*	0.81***	Misinterpreted
Luxembourg	-0.17	-0.92**	0.75***	Misinterpreted
Netherlands	1.05**	0.39	0.66***	Misinterpreted
Denmark	1.31***	0.66**	0.65***	Misinterpreted
Belgium	0.46*	-0.08	0.54***	Misinterpreted
Norway	0.36**	-0.17	0.53***	Misinterpreted
France	0.84***	0.53**	0.32**	Misinterpreted
Sweden	0.83***	0.40	0.40***	Misinterpreted
Spain	0.60***	0.21	0.40***	Misinterpreted
Germany	0.31**	0.13	0.17*	Misinterpreted
Japan	0.36***	0.20	0.16*	Misinterpreted
Canada	0.24	0.1	0.14	Careless
Ireland	0.19	0.05	0.15	Careless
Italy	0.43**	0.38	0.05	Careless
Greece	-0.052***	0.18	-0.7*	Careless
Korea	-0.54***	0.04	-0.58***	Careless
Australia	-0.24	0.25	-0.48***	Careless
Poland	1.82*	2.12	-0.3	Careless
Switzerland	0.83***	1.13***	-0.3	Careless
Finland	-0.37	-0.21	-0.16	Careless
Portugal	0.28	1.77**	-0.15	Careless

*Note: Three donors could not be estimated owing to collinearity issues, Tobit models with donor-year fixed effects used in the estimations. P-value in parentheses; *** p<0.01, ** p<0.05, * p<0.1.*

5.2 Conclusion

Donors allocating their aid in line with criteria suggesting the efficiency of mitigation projects will be wrongly accused of allocating aid in their own interest, specifically with respect to donor exports (which are positively correlated to the criteria of efficient mitigation). The misunderstanding is based on an omitted variable bias that disappears when variables accounting for mitigation efficiency are included in the model. Furthermore, the elasticities of individual donors, before and after controlling for mitigation efficiency, was also tested. Using seemingly unrelated regressions, which donors are misinterpreted when they are actually being efficient and which ones are careless in their allocation was established. No analysis has so far, studied individual donors' efficiency in allocation of mitigation aid and related misinterpretation concerns.

The findings from chapters 3 – 5, shows that overall donors often have considerations that are often not in line with the expectation that climate aid be allocated on the basis of efficiency consideration. Most bilateral donors do not even have transparent/publicly available targeting criteria for their aid allocation. Some donors continue to allocate their aid the way they do other development aid. However, the analysis also shows that donors are sometimes selfish which is why it is important to understand whether climate aid is used to promote the donors' strategic objectives, in the international climate change negotiations. Again, the conceptual difference between mitigation aid (addressing a global public good) and adaptation aid (addressing a local public good) becomes relevant and the reason why they may be used differently in the negotiations. Using a novel dataset on climate change negotiation behavior, such considerations are explored in the next chapter.

Appendix C

Variable description and sources

Categories	Variable	Definition	Mean	Std. Dev.	Min	Max	Source
Aid commitments	Mitigation aid (log)	Log of climate change related ODA for the primary purpose of mitigation (2012 constant prices, USD millions)	0.96	3.44	0	21.68	OECD (2015)
Recipient need	GDP pc (log)	Log of GDP per capita (PPP, constant 2011 international $)	8.54	1.01	6.19	10.79	World Bank (2015)
	Population (log)	Log of total population of the recipient countries	15.11	2.54	7.08	21.02	World Bank (2015)
Recipient merit	Civil liberties & political rights	Average of Freedom House index of civil liberties and political rights, reversed scale (7= greatest freedom) in recipient countries	4.19	1.81	1	7	Freedom House (2016)
	Political stability estimate	Measures perceptions of the likelihood that a government will be overthrown by unconstitutional and/or violent means in recipient countries	-0.33	0.94	-3.32	1.54	Worldwide governance indicator (2015)
Donor interest	Exports (log)	Exports made by donors to the recipient countries (values in '000 USD)	10.73	6.53	0	18.9	OECD (2015)
	UN voting with donors	Measurement of whether a recipient country votes in agreement with the donors on UN votes	0.74	0.16	0	1	Kilby (2011)
Mitigation efficiency	Marginal abatement costs (log)	Cost of reduction of greenhouse gas emissions measured in USD per ton of Carbon	6.15	2.33	0	8.81	Murty (2016)
	Kyoto operational	Dummy for year≥2005 when the Kyoto Protocol entered into force	0.75	0.43	0	1	Own calculation
	CERs (log)	Author's calculation of total certified emission reductions received by the recipient in that year	0.83	2.23	0	12.4	CDM pipeline (2016)
	DNA dummy	Dummy for whether a country has a designated national authority (DNA) - which is the organization granted responsibility to authorize and approve participation in CDM projects	0.53	0.49	0	1	UNFCCC (2015)
	Energy use (in kg of oil equivalent) (log)	Energy use refers to use of primary energy before transformation to other end-use fuels in the recipient countries	22.76	2.04	15.89	28.73	World Bank (2015)
	CO_2 emissions (log)	CO_2 emissions (in kilo tons) in the recipient countries in a given year	8.59	2.4	3.69	16.01	World Bank (2015)

Chapter 6

Buying support in international negotiations: The strategic use of climate aid

This chapter explores whether climate aid is used strategically to influence the climate change negotiations held at the United Nations Framework Convention on Climate Change (UNFCCC) negotiations. First, it looks at whether it is the access to climate aid or changes in its amount that affect recipients' statements in favor of the donors. Second, it tries to understand which type of aid is used to elicit support from the recipient. Based on the conceptual difference between mitigation and adaptation discussed in chapter 2, one can expect that aid for both can have distinct strategic advantages. Differences between mitigation aid, catering to a global public good, and adaptation aid, addressing a local public good, can lead to dissimilarities in the way each type of aid is used. The anticipation is that mitigation aid is less suitable for strategic use (to bribe or reward recipients in exchange of support in the negotiations) since recipients will reap only a small part of the benefits. Lastly, this chapter studies whether donors are trying to avoid negative statements or to promote positive ones. The work is based on joint research with Katharina Michaelowa and Paula Castro (see Bagchi et al., 2017).

6.1 Introduction

The strategic allocation of development aid is well documented in the existing

literature on UN voting. Through the strategic use of aid, donor countries induce aid recipient countries to vote in line with their positions on important issues discussed at the United Nations General Assembly (UNGA) (Dreher et al., 2008) or the United Nations Security Council (UNSC) (Kuziemko & Werker, 2006). This literature has so far been limited to international organizations in which decision-making is based on majority voting. However, consensus rather than majority voting is the most common decision-making rule in international politics (McKibben 2013, 416). Even in organizations like UNGA that also use majority voting, most decisions are taken by consensus (Häge and Hug 2016). In this chapter, it is argued that using aid or more specifically, climate aid strategically should be relevant in the context of international climate change negotiations, to ensure support or avoid opposition even when there are no formal votes. Motives can range from pushing forward a certain agenda, to avoiding public criticism that may put the donor's government in a negative light in the international media and influence national constituents.

Since decisions in the climate change negotiations are taken by consensus formal votes play a less important role than positional statements within the negotiations. A new dataset by Castro (2017) describing negotiation behavior under the United Nations Framework Convention on Climate Change (UNFCCC) is used to assess statements of support and opposition towards other parties' positions, rather than voting. At regular meetings of the UNFCCC bodies, country delegates negotiate a wide variety of climate-related issues ranging from implementation and monitoring of the performance of existing measures and agreements, to the preparation of new agreements relating to mitigation, adaptation, the provision of financial and technical support, among others. Based on the summaries of these negotiation meetings published in the Earth Negotiations Bulletins (ENBs), instances in

which one country agrees with or opposes the positions expressed by its peers, as well as the negotiation issue to which this support or opposition relates, is recorded.

On this basis, attempts are made to identify the role of aid as a strategic tool in a country's negotiation strategy.[2] Does access to climate aid affect a recipient's behavior towards the donors? If yes, are donors trying to avoid negative statements or to promote positive ones? To understand this, it is also important to see whether this any aid, or only such funding that is directly related to the area under negotiation aid for the adaptation to or the mitigation of global climate change?

This chapter contributes significantly to the existing climate aid literature. It is one of the first studies to combine the climate negotiations perspective with that of climate finance to show how the former can be influenced in a setting of consensus-type decision-making using a novel dataset on negotiation behavior. Secondly, this chapter makes a first attempt to create an empirical measurement of support of donors using the best and perhaps only dataset on negotiation behavior available, which can have several important implications for researchers working on the topic of climate finance as well as for climate negotiators and policymakers. Thirdly, so far, there has been a lacuna on the systematic research on the use of

6.2 Literature Review

To understand the climate negotiations context, it is important to draw the

[2] While the chapter focuses specifically on the use of aid to influence multilateral negotiation processes, this does not mean to exclude other strategies that may be used by parties to influence a negotiation, such as the provision of expert information, offering other kinds of material promises and threats, use of blaming and shaming, bundling of issues into package deals to allow for logrolling, forming coalitions, gaining support from non-state actors, etc.

theory from the existing negotiations literature where several concepts can help us understand how or why aid could be used strategically to encourage specific negotiation behavior. Threats and promises are well-known negotiation tactics (Hovi, 1998; Odell, 2000; Odell, 2002; Dür & Mateo, 2010; Bailer, 2012). This implies that the threat to withdraw aid and to reward with aid can also be an important negotiation tactic. However, this part of the literature does not focus specifically on the role of aid, and discussions generally remain at the level of a comparison of different types of negotiation tactics and strategies and an analysis of the reasons behind the choice of negotiation tactics and strategies.

The promise to provide aid in exchange of support in a multilateral negotiation can also be considered as an example of issue-linkage. Issue-linkage is usually characterized as a way to enhance the chances of cooperation by allowing parties to change the structure of payoffs in the negotiation game, e.g., by expanding the opportunities to punish non-cooperation (Oye, 1985; Barrett, 1997).[3] Alternatively, aid provision—particularly aid for purposes that are specific to the issues under negotiation—can be regarded as a side-payment or transfer that is also usually introduced in multilateral agreements as a way to reduce heterogeneity across parties and thus encourage broader participation (Carraro & Siniscalco, 1993; Chen, 1997). Issue-linkage and side payments are useful strategies in long-term negotiation processes that are best characterized as repeated games (Axelrod, 1984; Oye, 1985; Wagner, 2001). In this context, the body of work that argues that decision-making rules are important for negotiators' choice of bargaining strategies is particularly relevant for this chapter. McKibben (2013), for example, argues that while under majority voting states need to form coalitions in order to be able to

[3] A common example of issue linkage cited in the literature is the introduction of trade sanctions as a way to encourage compliance with multilateral environmental agreements.

delay or block an agreement, under the consensus rule each individual state has veto power. For this reason, she hypothesizes that in negotiations governed by consensus it is more likely that states will seek to extract concessions from their peers. Applied to this analysis, under the consensus rule used in the UNFCCC negotiations, it can be expected that recipients use their veto power to leverage more aid in exchange for being more supportive towards the donors.

The relevant negotiations and game-theoretic literature also examines the contribution of these (and other) bargaining strategies to the overall outcome of the negotiations—the likelihood to achieve full cooperation—and to compliance and enforcement problems (see, in addition to the above, Hopmann, 1995; Wagner, 1999; Underdal, 2012). However, the literature has, so far, not fully addressed the question of how effective they are in influencing individual partner countries' negotiation behavior towards preference alignment with a donor within a multilateral setting. Existing research rather looks generally at which forms of bargaining may be conducive to drawing other negotiators on one's side (Sebenius, 1992; Money, 1998; Wagner, 1999). In addition, Weiler (2012) looks at how the choice of negotiation strategies affects parties' individual success at the negotiations.

In contrast, the literature on UN voting explicitly focuses on the use of development aid in multilateral decision-making. Rai (1980) delineates the possible causal channels, namely the use of aid as a means to either incentivize (ex ante), or to reward or punish (ex post) voting alignment (or the lack thereof) with the donor at the General Assembly. In the 1990s, the general effect of aid on UNGA voting is rejected based on econometric analysis (Sexton & Decker, 1992), but reconfirmed for "important votes", i.e. votes on topics of actual relevance to the donor (Wang, 1999).

Simultaneously, several authors explore the reversely causal channel of voting alignment leading to more aid. This field of research has grown ever more quickly in the 2000s, with authors further trying to disentangle reward and punishment from inducement (Derouen & Heo, 2004) and examining the UNSC and the United Nations Commission on Human Rights rather than just UNGA voting (Kuziemko & Werker, 2006; Dreher et al., 2009; Lebovic & Voeten, 2009; Bueno De Mesquita & Smith, 2012; Hwang, Sanford, & Lee, 2015). Recent studies also increasingly look beyond the US at a broader set of donor countries (Pincin, 2012; Lim & Vreeland, 2013; Bueno de Mesquita & Smith, 2016), and at the influence that such donors may exert on multilateral agencies (like the IMF, the World Bank and regional development banks) to mobilize their funding for vote buying purposes (Barro & Lee, 2005; Kilby, 2006; Reynaud & Vauday, 2009; Dreher & Sturm, 2012). Conceptually, there has also been a discussion on how to disentangle the effect of vote alignment when preferences are aligned anyway, from the effect of alignment when initial preferences are truly opposing (Andersen, Harr, & Tarp, 2006; Kilby, 2011; Carter & Stone, 2015). Finally, some studies consider the effect of this type of strategic aid on development outcomes (Stone, 2004; Dreher, Eichenauer, & Gehring, 2013; Kilby & Dreher, 2010).

A thorough review of the literature shows that no study till date has analyzed the impact of aid being used strategically in the context of the climate change negotiations and this chapter aims to do precisely that. However, there are several caveats to consider:

Making statements within an international negotiation process is conceptually different from voting. It allows for a more nuanced expression of preferences than just a yes- or a no-vote. Moreover, even if a country is in clear agreement or disagreement with another party's statement, it will not

necessarily see any need to express this within the plenary. Such a lack of expression is different from an abstention in a vote (Ehlermann & Ehring, 2005: 67). The country in question may simply rely on others to make the relevant point or feel that it has not (yet) sufficiently familiarized itself with the specific topic under discussion to form a clear opinion. It may also use diplomatic language in a way that is identifiable as disagreement only by those directly involved, or it may support a position not because it is convinced by its actual content, but because it believes that such support will delay the negotiation process.

Statements within international negotiation processes usually have no immediate effect on the overall outcome of the negotiation process. Statements can be used strategically to obtain a better starting position in the following round of negotiations (e.g., by initially exaggerating ones' demands or positions), and they can be revised at any time.[4] For this reason, swaying such statements—which would be considered 'cheap talk' or 'bluffing'—may not appear important enough to donors to attempt any influence through aid within international negotiations. From this perspective, statements in negotiation processes could resemble the votes qualified as "unimportant" in the UN voting literature and, just as the latter, not show any significant relationship to development aid.

Lastly, other than at the UN, negotiators from industrialized countries typically represent their country only in a very specific thematic area and within an ex-ante defined mandate, and their authority may not go beyond

[4] For a study analyzing such strategically adopted extreme positions, see Schneider and Cederman (1994). A broader discussion on the difference between actors' preferences and their strategically adopted positions can be found in Frieden (1999) and Morrow (1999). On the dynamics of making and withdrawing proposals in the climate change negotiations, see Yamin and Depledge (2004: 440).

that (Skovgaard & Gallant, 2015; see also Groen & Niemann, 2010, for the specific case of the EU delegation to the UNFCCC). For industrialized country negotiators this implies that they may not have control over overall aid and can commit funding only in their specific field. Similarly, negotiators from developing countries may not be overly interested in general development aid but prefer funding over which they will have more direct authority. The distinction between different types of aid that could be relevant as a strategic tool hence appears even more important in the context of international negotiations than in the context of UN voting.

In sum, the expected mechanisms relating aid and negotiation support may not be fully identical to those discussed in the literature review, and it is not a priori clear, to what extent a relationship between aid and negotiation support will be found at all. In the following section, the possible mechanisms will be clarified and illustrated with some of the ample anecdotal evidence and suggestive statements by negotiators from the UNFCCC.

6.3 Conceptual Framework

If statements in the framework of international negotiations are generally not binding, and usually do not directly lead to any outcome, why would anyone care about support or criticism in this context at all? The following arguments may be relevant in this context:

First, media often intensively report about international negotiations. In addition, Non-Governmental Organizations (NGOs), business lobbies and other interest groups closely observe the negotiation process (Betzold, 2013; Böhmelt et al., 2014). At the UNFCCC, these groups directly attend most of the meetings. Under such conditions, whatever is said does not remain behind

closed doors. It is thus expected that support or opposition by other parties to affect the reputation of the national delegation or even of the government as a whole through information that spread to peers outside the negotiation process and to the domestic public. Most countries prefer to be seen as 'deal makers' rather than as obstructive laggards or 'deal breakers'. Criticism is hence perceived as 'shaming and blaming' while praise is perceived as a sign of successful international diplomacy.

Conrad's discussion of the Chinese problem with the international media blaming the country for the failure of the UNFCCC's summit in Copenhagen represents an illustrative example:

> "*China's negotiating style during the final hours of Copenhagen has captivated media observers around the world [...]. The state of negotiations posed an imminent risk of Premier Wen Jiabao being associated with a political failure. [... Eventually] the team around Wen Jiabao was primarily concerned with limiting the damage and insulating the Prime Minister from the foreseeable failure of the summit.*" (Conrad, 2012: 444).

Second, changing positions, unless well explained, can appear inconsistent and be considered as a sign for incompetence, weakness or opportunism. A frequent and/or drastic change will be caught by the media, which may imply reputational cost for the delegation at least with respect to particular audiences.

Third, while they are non-binding, statements given at any time of the negotiations pave the way for the (dis) agreement on which the negotiations will end: Initial support for any proposition in the negotiations can lead to

social pressure on other parties to follow suit. Thus, achieving support at any point within the negotiations leads to path dependencies that increase the chance of an agreement on this point in the future. Similar dynamics can occur in the context of initial criticism: Criticism by one country may trigger criticism by others. These dynamics make each individual statement more relevant than it may appear at first glance.

Finally, under the type of consensus-based decision-making procedure that is typical of the UNFCCC and many other arenas of international negotiation, any individual party has a de facto veto power over any decision (Steinberg, 2002; Yamin & Depledge, 2004: 443; Ehlermann & Ehring, 2005: 65).[5] It therefore becomes essential to convince *all* parties to support an emerging consensus. Hence convincing each individual country becomes very important—more important than in UNGA voting where a few opposing views cannot block the decisions. This in turn suggests that donors may resort to all means at their disposition—including threats and promises related to aid—to convince recipient countries to support their positions.

On the basis of these arguments, this analysis expects parties to care about support and opposition in the negotiations. While the political benefits and costs may be less pronounced than if there had been a direct vote, it is still expected that they will be sufficiently pronounced to induce action by parties trying to obtain the former, and to avoid the latter. Development aid can be a useful tool in this respect.

Development aid may be related to support or opposition in the

[5]Note that there are a few exceptions to this rule as "consensus" does not necessarily require unanimity, but just a general sense that the parties in the room will not challenge the decision—which has at times been interpreted in a rather peculiar way in international negotiations, as discussed by Michaelowa, Michaelowa and Bagchi (2016).

negotiations in different ways. On the one hand, aid can generally elicit support for the donor by fostering mutual understanding and trust through the experience of fruitful collaboration. This collaboration and exchange may lead to the natural development of common principles and ideas, so that positions become more aligned. This can generate ties between certain donors and recipients, especially in the long run. This analysis does not consider this as a strategic use of aid because the alignment of preferences and the potentially resulting support in the climate negotiations are then more of a by-product than the central objective of the engagement in aid. Aid allows the donor to increase its soft power, but this need not even be intentional, particularly not in the context of a rather specific issue-area such as climate change.

On the other hand, climate aid can be used strategically to buy support in the negotiations. This support buying can happen individually (vote buying by individual donors), as illustrated by the following example of Japan prior to the negotiation of the Kyoto Protocol:

> "*In Japan, ministers are distributing funds with an eye on diplomatic aims. The government's Cool Earth Partnership announced last year, includes US$10 billion for climate projects in developing countries. After interviewing government officials, Friends of the Earth Japan concluded that the scheme was designed in part to buy support for Japan's position at Kyoto protocol negotiations, where the country is pushing for India and China to do more to limit emissions. Ministers are currently considering partnership projects in some of the world's poorest nations, such as Burkina Faso and Bangladesh.*"[6]

[6] *New Scientist*, 13 January 2009 (https://www.newscientist.com/article/dn16406-comment-climate-aid-is-tantamount-to-bribery/).

However, votes might also be bought by the group of developed countries as a whole, e.g., when mechanisms for the financing of poor countries are directly built into the text of the agreement under discussion in order to elicit their overall consent, and to make them swallow those parts of the agreement they would otherwise oppose.[7] Referring to the "Copenhagen Accord" as discussed in Chapter 2 already, as a minimalistic substitute for the much broader agreement initially intended, the promise of 100 billion USD/year in climate finance figured in the document. In this context, some vulnerable developing country delegates explicitly voiced the allegation of a bribe that industrialized countries were using to obtain consensus on an inacceptable document, simply to mask their failure. Dimitrov reports a number of related statements, notably the following statement by the Sudanese ambassador:

> "*[The Copenhagen Accord] is murderous. It condemns and turns Africa into a furnace because 2 degrees Celsius results in 3.5 degrees [temperature rise in Africa] according to IPCC. [...] The promise of 100 billion US dollars would not bribe us to destroy the continent.*" (Dimitrov, 2010: 811)

While these examples suggest that aid is provided (or at least promised) ex ante, other accounts suggest that aid may also be provided ex post as a reward or be withdrawn as a punishment. This follows the tit-for-tat or reciprocating strategy suggested by Axelrod (1984) as a way to encourage cooperation in repeated negotiations, and is also in line with UN voting literature where evidence has been found for both. While this suggests that there may be a reverse causality issue (does aid cause support, or does support

[7] For the theory on such broad transfers, see Carraro and Siniscalco (1993) and Chen (1997).

cause aid?), the distinction is not substantially meaningful for this analysis. Firstly, as in the tit-for-tat game, these multilateral negotiations typically consist of several rounds that stretch over many days, allowing for reciprocating strategies: today's reward for yesterday's support in turn constitutes an incentive for further support tomorrow. In addition, an ex-post reward or punishment may well be anticipated, which is then substantively equivalent to an initial promise. Aid commitments are not much more than promises anyway, since subsequent disbursements cannot be fully taken for granted. The same argument can be made for threats of withdrawal. The media reported some anecdotal evidence related to such threats:

> "*The US State Department is denying climate change assistance to countries opposing the Copenhagen accord*"[8]
>
> "*It was made very clear by the EU, UK, France and the US that if they did not back them then they would suffer.*"[9]

This clearly suggests a strategic use of development aid to obtain support. As far as possible, attempts are made here to empirically disentangle this strategic use of aid for support in the climate negotiations. Along with multiple fixed effects, several types of aid with be distinguished between and how they can be used differently based on the donor's strategic need. First, the analysis approaches the problem from a Yes/No perspective: Is it the access to aid or changes in its amount that affect recipients' statements in favor of the donors? This leads to the first two hypotheses:

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[8] The Guardian, 9 April 2010 (http://www.theguardian.com/environment/2010/apr/09/us-climate-aid).

[9] African diplomat, cited by The Guardian, 11 April 2010 (http://www.theguardian.com/environment/2010/apr/11/climate-aid-threats-copenhagen-accord).

H1: Recipients, which receive any aid, tend to support donors more in the negotiations.

H2: Recipients that receive a positive amount of aid exhibit higher support for donors in the negotiations.

Once the Yes/No question is answered, it is important to understand which type of aid is used to elicit support from the recipient. General aid, i.e. Official Development Assistance (ODA) as a whole, can a priori be used in both ways. It is the basis of bilateral cooperation between donor and recipient governments, and can generate long-term partnerships between countries. As argued above, while such partnerships can be beneficial in a concrete negotiation context, they are not built up with this specific objective, and the related funding can hence not be considered as strategic for support in these negotiations. However, as highlighted in the UN voting literature, general ODA can also be used as an incentive, threat or reward, and in principle, this is also true for the specific context of the climate negotiations. To the extent that ODA is valuable to the recipient, its promise represents the famous 'carrot', and the threat of its withdrawal the corresponding 'stick'.

Yet, the negotiators on both sides are different from the diplomats that represent their countries in the UN General Assembly or the UNSC. In the climate negotiations, the typical negotiator is a specialized staff from an environmental agency or ministry, and even if the heads of state are frequently flown in at the end of the negotiations for the final speech, the more specialized staff is de facto responsible to negotiate the deal (Skovgaard & Gallant, 2015). As mentioned above, these negotiators may not have the authority over general ODA. On the donor side, they would need to enter complex negotiations with other parts of their own government in order to induce a change in overall aid. They can however, more easily, promise specific climate aid, which falls in their area of responsibility. On the recipient

side, there may also be a greater demand for climate-specific funding, because other funding will be channeled into government budgets that are not under the control of the agencies represented in the negotiations. Assuming that recipients' delegates have a strong interest in the size of their own budget, which affects their standing within the domestic government, they will hence prefer specific climate funding to general ODA. In such a setting, it is expected climate aid rather than development aid in general, is used for strategic purposes within the UNFCCC negotiations.

As already discussed in the previous chapters, within climate aid, adaptation aid caters to a local public good while mitigation aid caters to a global public good. If developing country negotiators do not only care about boosting their budget, adaptation aid should be preferable to them based on the reasoning discussed in Chapter 2. Since adaptation directly addresses the needs of their domestic population in terms of preventing the local effects of droughts, floods, heat waves or other climate-related events, such aid generates exclusive benefits for the recipients. In contrast, mitigation, which addresses a global public good, generates benefits that are globally non-excludable by definition. In other words, there is no particular local benefit of a mitigation activity implemented locally as compared to the same activity implemented elsewhere.[10] This leads to a set of nested hypotheses, from broad to specific:

H3: Aid is used to buy support (or avoid opposition) in the negotiations.

H3a: Climate aid, rather than general aid, is used to buy support (or

[10] In reality, the line cannot be drawn so sharply because most mitigation projects also bring about some local co-benefits such as infrastructural development or job creation, but for a given amount of aid, the directly locally relevant effect will still be higher for adaptation aid than for mitigation aid.

avoid opposition) in the negotiations.

H3b: Adaptation aid, rather than mitigation aid, is used to buy support (or avoid opposition) in the negotiations.

Last and most importantly, it is necessary to understand whether donors use aid to elicit support from the recipients or use it to suppress criticism from them. It is not a-priori clear which direction this would go. Whichever way it goes, it would ultimately justify the support-buying hypothesis, albeit the causal mechanisms will be different. Therefore, this study hypothesizes the following:

H4: Aid is used to reward positive statements made by recipients in favor of the donors.

6.4 Data and Empirical Methods

6.4.1 Data

The dataset used in this analysis is similar to that used in chapter 5. It is still in the three-dimensional panel form with dyadic information for donor-recipient pairs over the years 2002-2013. Keeping this three dimensional structure was important since we wanted to be able to match our negotiations data (which is in a dyadic form with donor recipient dimensions) with that of the climate aid data (also in a dyadic form with donor and recipient dimensions). Again, the donors included in the analysis are the traditional members of the OECD's Development Assistance Committee (DAC) as far as they correspond to parties to the UNFCCC. The only difference in this dataset is that since EU donors typically speak with one voice in the climate

negotiations, they are considered as a single donor here. Information referring to the EU is correspondingly aggregated across all EU members. Overall the dataset hence includes the following ten donors: Australia, Canada, the EU, Iceland, Japan, Korea, New Zealand, Norway, Switzerland, and the United States. Similarly, all 149 DAC aid recipients are included that have simultaneously been parties to the UNFCCC.

The dependent variable is coded from a new dataset on negotiation behavior (Castro, 2017). The data covers all regular meetings of the UNFCCC bodies across the different areas under discussion. Coding is based on the summaries of these negotiation meetings as published by the International Institute for Sustainable Development (IISD) in its Earth Negotiations Bulletins (ENBs) (IISD, 2000-2013) (see appendix for information on checks on inter-coder reliability). Each issue of the ENB records a full day of negotiations covering discussions on all the items and topics on the agenda for that day. Using the ENBs for coding negotiation behavior has several advantages but also some limitations. The main advantage is the availability of a long time series of consistent data. Despite not being full transcripts, the ENBs are the most complete and regular reports of the climate change negotiations and are written by trained reporters in an objective way and in a consistent language over the years. In addition, there is an effort to keep them neutral and independent from any political side. However, they present summarized versions of the discussions, and it is very difficult to ascertain what is not reported. Specific statements are attributed to countries only for those negotiation meetings that are open to observers. Whenever the ENBs cover closed meetings, the statements are not attributed to particular parties. The dataset thus excludes most informal meetings in which very controversial or very detailed issues are discussed. Despite this, it is expected that open meetings—in which those informal discussions are frequently reviewed and

recapitulated—will still reflect the main patterns of support and opposition between donors and recipients.

The negotiation behavior dataset codes how countries interact with each other in the negotiations as reported by the ENBs. It enables the distinction between supportive statements (speaking on behalf of, supporting, or agreeing with one another) on the one hand and opposing statements (delaying, opposing or criticizing others' positions or statements) on the other. For example, volume 12, issue 493 of the ENB, from 6th December 2010, reports: "VIETNAM, PERU and BENIN stressed that the Kyoto Protocol is the cornerstone of the regime to address climate change. [...] JAPAN said since not all major emitters are part of the Kyoto Protocol, a second commitment period is neither fair nor effective." This unit of text is coded as an agreement between Vietnam, Peru and Benin (with separate observations for each of the possible dyads), and as opposition by Japan against these three countries. Further coding examples can be found in the Appendix D, which includes a summary of the data's codebook.

This coding scheme is applied to all negotiations during the period of analysis, so that there is a variable recording all instances in which each country expresses support or opposition towards any of the other countries participating in the discussions. In this context, it is important to know only about recipients' reactions to donor statements, the observations on exchanges among donors or among recipients alone, as well as donors' reactions to recipients, are dropped. Overall, a total of 3158 statements in which recipients criticize or support any donor over the years 2002-2013 are found. Descriptive statistics of this data are available in Appendix 6.[11] The most straightforward

[11] The negotiations encompass interactions not only between individual countries, but also between country groups or coalitions such as the group of Least Developed Countries, the

way to compute measures for support ('*Supportive statements*') and opposition ('*Critical statements*') is then simply to add up the respective number of statements by each recipient with respect to each donor across the different negotiation meetings in any given year.

This simple aggregation of supportive and opposing statements hides a more nuanced range of relationships reflected in the sub-categories mentioned in brackets above. Within the supportive statements, there is one extreme case of countries actively coordinating their positions so that one of them is able to 'speak on behalf' of the others; then the case of countries directly expressing 'support' for one of their peers; and finally the cases in which countries simply 'agree' with what someone else already said. Within the opposing statements, one extreme is the case in which a country openly 'criticizes' another's positions, actions or statements, followed by a country simply expressing an 'opposing' position, and finally a country seeking to 'delay' the discussion of someone else's proposal.

If countries consider the reputational costs and benefits of support and opposition in the negotiations, the above-mentioned differences in the sub-categories should be relevant to them. Open criticism, for instance, will much more easily attract the attention of the media than a mild statement of disagreement. Therefore, weights are assigned to the different sub-categories before building the sum. In addition, a measure representing supportive and opposing statements is created, by subtracting the weighted sum of the latter from the sum of the former. This leads to a '*Support index*', which takes into account both the frequency and the degree of the support and ranges from -18 (strong and frequent opposition) to 20 (strong and frequent support):

African Group, the EU or the G77. For this analysis, we exclude all observations in which such coalitions speak, except for the case of the EU as a donor.

$$\textit{Support index}_{ijt} = \quad 3 \cdot \textit{speaking on behalf}_{ijt} + 3 \cdot \textit{support}_{ijt} + 2 \cdot \textit{agreement}_{ijt} \\ -1 \cdot \textit{delay}_{ijt} - 2 \cdot \textit{opposition}_{ijt} - 3 \cdot \textit{criticism}_{ijt}, \tag{1}$$

here, each of the variables $\textit{speaking on behalf}_{ijt}$ etc. measures the frequency of the respective type of statement for each donor i, recipient j, and year t.

As an example: In 2010, China opposed the EU eight times, but also agreed with the EU once. The *Support index* for this particular year and dyad is hence coded as:

$$\textit{Support index}_{EU,\ China,\ 2010} = 3 \cdot 0 + 3 \cdot 0 + 2 \cdot 1 - 1 \cdot 0 - 2 \cdot 8 - 3 \cdot 0 = -14$$

To ensure that the findings are robust to the weights described above, a non-weighted index is also built as an overall measure of support and criticism, which ranges from -9 (frequent opposition) to 10 (frequent support):

$$\textit{Unweighted support index}_{ijt} = \quad \textit{speaking on behalf}_{ijt} + \textit{support}_{ijt} + \\ \textit{agreement}_{ijt} - \textit{delay}_{ijt} - \textit{opposition}_{ijt} - \textit{criticism}_{ijt} \tag{2}$$

In order to put these values into perspective, how many times each country (donor or recipient) is reported by the ENBs to speak in each year ('*Interventions donor*' and '*Interventions recipient*'), even when this participation does not entail supporting or criticizing another party, is coded. This is to be able to control for the fact that some countries simply participate in the debate more often than others do, which may be related to the size of their delegation, the delegates' language proficiency and the like. As an alternative measure of donors' and recipients' level of activity in the negotiations, the total number of (supportive and opposing) interactions for each dyad and year ('*Dyadic interventions*') are also counted.

The explanatory variables are bilateral ODA commitments (in millions of constant 2014 USD) for each donor-recipient dyad and year as reported by OECD (2016). Total aid commitments as well as climate aid commitments based on the 'Rio markers' that separately identify mitigation and adaptation aid have been used. The Rio markers include two types of variables, depending on whether adaptation or mitigation are the main objective of the respective aid activity ('Adaptation principal', 'Mitigation principal') or only one relevant objective among others ('Adaptation significant', 'Mitigation significant'). For this analysis, aggregate measures of total adaptation and total mitigation aid was created.

To reduce the effect of outliers, both the dependent variables and the aid variables are used in natural logarithms. To avoid the creation of missing adding a constant rescales values for values smaller or equal to zero the numbers. To allow for a more flexible functional form, square terms for all variables reflecting the level of negotiation activity by recipients, donors or dyads are introduced. For details on these transformations, see table D5 in the appendix.

In addition, a number of controls were used, such as the 'Trade relationship' between the donor and the recipient (UN Comtrade 2016), the absolute difference between the donor's and the recipient's level of democracy ('Democracy') (Quality of Government Institute 2016), Voeten's (2013) voting similarity index, i.e., the share of aligned UN votes between donor and recipient ('UN alignment'), recipients' vulnerability to climate change ('Vulnerability') as measured by the ND-GAIN vulnerability index, (ND-ECI 2015) and the natural logarithm of the recipients' 'GDP per capita', PPP (constant 2011 international $) (World Bank 2016). All variable definitions and basic descriptive statistics are presented in the appendix in table D5.

6.4.2 Methodological Approach

In the first step, the aim was to provide information on whether it is primarily the amount of aid received or just the mere possibility to receive aid at all that influences recipients' support for donors at the negotiations, separate models with a dummy for any positive aid flow ('Dummy (Aid)') on the one hand, and on the other hand regressions restricted to dyads with positive aid flows are estimated.

The next step was to assess which type of aid is used in the negotiations, i.e. whether it is ODA or climate aid, which is used specifically. Since the data are in the form of a three-dimensional panel, it is possible to use dyad fixed effects as well as year fixed effects. This controls for all time invariant donor and recipient characteristics as well as for characteristics that vary only over time and not across dyads. The year fixed effects capture the influence of individual years such as, for instance, the year 2009 with the Copenhagen summit, but also general trends over time. The dyad fixed effects capture the influence of all unobservable or otherwise omitted variables that are specific to the donor and/or the recipient. The latter substantially reduce the potential sources of endogeneity. Dyad fixed effects notably control for long-term relationships between a donor and a recipient, based, e.g., on common culture and language, or on prior development cooperation. If aid is positively significant in this type of model, the effect cannot be explained by the natural alignment of preferences between long-term development partners, and therefore suggests that aid is used strategically. To control for unobserved time-variant country characteristics (Bai 2009, p.1232), interacted fixed effects were used. Specifically, the following types of fixed effects were used to show how the results change with the inclusion of different types of fixed effects: (i) the interaction of recipient and year fixed effects, and (ii) the interaction of

donor and year fixed effects. This can capture differing reactions to period-specific shocks (such as the Copenhagen failure) or to more gradual shifts over time (such as the phasing in of new negotiation topics that may influence existing alliances). Moreover, an assessment of whether the postulated strategic use of aid and the related negotiation behavior of the recipients can always be observed immediately is made. In other words, is the aid used strategically within a one year, given the fast pace and constantly evolving nature of the negotiations? Further placebo regressions are estimated using 1- and 2-year lags and 1-year leads of the aid variables.

In the last step, an attempt was made to understand which type of behavior led to more aid. Therefore, alternative dependent variables reflecting supportive statements ln(Supportive statements) and critical statements ln(Critical statements), were used. Looking at them separately might be relevant since it could be that support and criticism are influenced by aid in different ways. The two variables are left-censored as less than zero statements cannot be made. This suggests the use of a Tobit model. However, dyad fixed effects are not compatible with this approach because their consistent estimation requires a large number of periods, while we only have 5 years for adaptation aid and 11 years for mitigation aid. Therefore, a Poisson pseudo-maximum likelihood (PPML) model was used. The advantage of using this model was that it allows us to address the left-censoring at zero while providing more flexibility in terms of adding fixed effects.[12]

Given the three-dimensional nature of the panel dataset, special care also needs to be given to clustering. It is clearly insufficient to cluster at the recipient-donor dyad level, as this would imply that any observations for the same donor but different recipients or for the same recipient, but different

[12] While PPML has been more frequently used to estimate gravity models in international trade, some recent applications can be found in the aid allocation literature, too (see Dreher, Gehring, and Klasen 2015).

donors should be uncorrelated. For a sufficiently large sample across all dimensions, multi-way clustering would be ideal, as suggested by Cameron, Gelbach and Miller (2011). However, given that there are only ten donors in the sample, multi-way (as well as simple donor-level) clustering does not lead to a consistent estimation of the variance-covariance matrix. For the main specifications only, clusters at the recipient level are included but in the robustness checks regressions with multi-way clustering at the recipient and donor levels are estimated despite the aforementioned methodological concerns.[13]

6.5 Empirical Results

Table 6-1 and 6-2 present the first results based on panel regressions exploring the empirical question of whether it is the access to aid or changes in its amount that affect recipients' statements in favor of the donors. While the results for switches between aid and no aid are significant for both adaptation and mitigation aid (see Table 6-1), they are fully insignificant when looking merely at the amount of aid (see Table 6-2). The switches from no climate aid to some climate aid leads to much greater relative changes than any additions or reductions once aid is provided to a country. Furthermore, only 47 and 28 recipients received mitigation or adaptation aid, respectively, out of our total sample of 129 developing countries. In table 6-2 where the impact of changes to amount of aid on support is measured, the sample size in Table 6-2 is reduced from an earlier 5110 to just 198 for adaptation aid, and from 15330 to 550 for mitigation aid. Since this may obviously also affect the significance

[13] The panel models using clustering are implemented with the user-written command *reghdfe* in Stata (Correia 2017).

level, the results based on strictly positive aid values need to be interpreted with some caution. Overall, the results are not surprising.

The coefficient estimates for the control variables are only partially significant. Apparently, the dyad fixed effects already capture most of the relevant effects. Notably, in the regressions on adaptation aid most controls are insignificant. This may be related to the substantially smaller sample in this case (the same occurs when we take a comparable sample for general and mitigation aid). One frequently significant variable is Interventions recipient. Both recipients who often criticize and recipients who often voice agreement (i.e., the recipients at both ends of the Support index scale) are doing so to some extent, just because they are generally very active.

In addition, voting alignment in the UN General Assembly is positively significant in some regressions indicating that positional closeness and/or mutual understanding between nations is correlated across different policy areas. Furthermore, highly vulnerable countries tend to support the donors more strongly and to voice less opposition. This may be due to the fact that some Western countries, and notably the EU, have been seen as rather progressive actors during the last decade. Finally, recipients' GDP per capita is negatively significant, suggesting that the greatest disagreement occurs between developed and emerging economies, which should primarily capture the BASIC countries (Brazil, South Africa, India and China) that have built their own negotiation group and have become increasingly assertive over time during the period of observation.

Tab. 6-1: Regressions showing the relationship between access to aid and support

Dependent variable: ln(Support index)	(1)	(2)	(3)	(4)	(5)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Mitigation aid
Dummy (Aid)	0.0011	0.0359**	0.0497***	-0.0021	0.0638***
	(0.54)	(0.03)	(0.00)	(0.61)	(0.00)
Interventions recipient	-0.0001	0.0029***	-0.0006	0.0035***	0.0026***
	(0.92)	(0.00)	(0.35)	(0.00)	(0.01)
Interventions recipient^2	-0.00001***	-0.0001***	-0.00001***	-0.0001***	-0.0001***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Interventions donor	-0.0001	0.0001	-0.0001	0.0001	0.0001
	(0.24)	(0.47)	(0.20)	(0.49)	(0.41)
Interventions donor^2	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.73)	(0.57)	(0.55)	(0.77)	(0.42)
Trade relationship	0.0021	0.0050	0.0026	0.0042	0.0047
	(0.59)	(0.48)	(0.56)	(0.51)	(0.49)
Democracy	-0.0003	0.0015	-0.0002	0.0008	0.0014
	(0.82)	(0.60)	(0.89)	(0.75)	(0.62)
UN voting	0.0192***	-0.0031	0.0158***	-0.0054	-0.0056
	(0.00)	(0.71)	(0.01)	(0.54)	(0.50)
Vulnerability	0.2446*	0.5294	0.2546*	0.5262	0.5420
	(0.08)	(0.24)	(0.07)	(0.24)	(0.23)
ln(GDP per capita)	-0.0367**	-0.0548	-0.0390**	-0.0536	-0.0561
	(0.03)	(0.18)	(0.03)	(0.18)	(0.17)
Observations	15330	5110	15330	5110	5110
Number of clusters	129	129	129	129	129
Year FE	YES	YES	YES	YES	YES
Dyad FE	YES	YES	YES	YES	YES
Adj. within R-squared	0.095	0.081	0.110	0.070	0.103

Note: Clustering at recipient level. P-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Tab. 6-2: Regressions showing changes in aid amounts and support

Dependent variable: ln(Support index)	(1)	(2)	(3)	(4)	(5)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Mitigation aid
ln(Aid)	0.0002	0.0090	-0.0002	-0.0018	-0.0027
	(0.65)	(0.35)	(0.98)	(0.15)	(0.73)
Interventions recipient	0.0003	-0.0012	-0.0039***	0.0038***	-0.0022
	(0.67)	(0.86)	(0.00)	(0.00)	(0.72)
Interventions recipient^2	-0.00002***	-0.0001	-0.0000	-0.0001***	-0.0001
	(0.00)	(0.35)	(0.36)	(0.00)	(0.31)
Interventions donor	-0.0001	-0.0017	-0.0023*	0.0002	-0.0004
	(0.46)	(0.23)	(0.08)	(0.30)	(0.82)
Interventions donor^2	-0.0000	-0.0000	0.0000	-0.0000	-0.0000
	(0.54)	(0.69)	(0.16)	(0.54)	(0.51)
Trade relationship	0.0029	0.4652	0.4631	0.0047	0.8590
	(0.51)	(0.51)	(0.45)	(0.52)	(0.16)
Democracy	0.0002	0.1191	-0.0066	0.0000	0.1602**
	(0.88)	(0.19)	(0.82)	(1.00)	(0.05)
UN voting	0.0228***	0.2176	0.1350	-0.0097	-0.0628
	(0.00)	(0.61)	(0.29)	(0.33)	(0.82)
Vulnerability	0.2321	3.3746	1.0496	0.5878	2.9885
	(0.16)	(0.61)	(0.61)	(0.31)	(0.63)
ln(GDP per capita)	-0.0409*	1.2201	-0.3129*	-0.0645	1.1135
	(0.06)	(0.30)	(0.07)	(0.23)	(0.29)
Observations	10890	198	550	3677	213
Number of clusters	128	28	47	122	28
Year FE	YES	YES	YES	YES	YES
Dyad FE	YES	YES	YES	YES	YES
Adj. within R-squared	0.135	0.074	0.153	0.063	0.105

Note: In this table, the sample is limited to observations with strictly positive values of aid (Aid >0). Clustering at recipient level. P-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6-3 shows only the coefficient of the aid variables (logged) in response to the different combinations of fixed effects (note that the same set of control variables used in tables 6-1 and 6-2 have been used but not reported).

Tab. 6-3: Coefficients of aid by types of fixed effects included in the model

Dependent variable: ln (Support index)	(1)	(2)	(3)	(4)	(5)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Mitigation aid
Model includes:					
- Dyad & year FE	0.0001	0.0026**	0.0033***	-0.0003	0.0042***
	(0.62)	(0.03)	(0.00)	(0.30)	(0.00)
- Donor & year FE	0.0004**	0.0025*	0.0028***	0.0003	0.0036***
	(0.02)	(0.05)	(0.01)	(0.32)	(0.00)
- Recipient & year FE	0.0001	0.0020	0.0025***	-0.0001	0.0028***
	(0.30)	(0.10)	(0.01)	(0.67)	(0.01)
- Year FE	0.0003**	0.0024*	0.0028***	0.0003	0.0035***
	(0.02)	(0.06)	(0.01)	(0.27)	(0.00)
- Dyad FE &interactive	0.0001	0.0026**	0.0033***	-0.0003	0.0042***
recipient x year FE	(0.63)	(0.03)	(0.00)	(0.29)	(0.00)
- Dyad FE & interactive	0.0001	0.0026**	0.0033***	-0.0003	0.0042***
donor x year FE	(0.66)	(0.03)	(0.00)	(0.31)	(0.00)
Observations	15330	5110	15330	5110	5110

Note: Table shows results for the main explanatory variable *ln(Aid)* in separate regressions with different fixed effects. Clustering at recipient level. P-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The results are consistent with H3 that posits that climate-change related aid, rather than general ODA, is strategically used in the negotiations. Contrary to expectations, there is no evidence for a greater effect of adaptation aid as compared to mitigation aid (H3b). In contrast, mitigation aid has a similar effect. It seems that the co-benefits of development projects in the area of mitigation have been attractive enough to make this type of aid interesting for recipients.

With the inclusion of fixed effects, it was expected that dyad fixed effects were crucial to distinguish long-term commonalities or friendship between donor and recipient from the short-term strategic use of aid in the negotiations. If aid also affects negotiation support by building up long-term

friendly relationships between donor and recipient, a stronger positive coefficient in regressions without the dyad fixed effects, and possibly a positively significant effect for general aid as well should have been found. This is indeed the case: the coefficient of total ODA multiplies by 3 and 4 and becomes significant in the regression using only year fixed effects and, in the regression, using a combination of year and donor fixed effects, at least for the full sample (Column 1). There is no increase, however, for the coefficients of mitigation and adaptation aid in these regressions. This suggests that overall aid may be effective by generally building friendship between countries, while adaptation and mitigation aid affect negotiation behavior of recipients only in the short run, i.e., through their strategic use in a given negotiation round.

The last two rows of Table 6-3 further confirm the existence of such a short-term strategic relationship between climate aid and negotiation support. They include the strictest possible form of control for unobservables by including not only dyad fixed effects, but also country X year fixed effects in the regression models. These results are also robust to modifications of the estimation model presented in the appendix. For example, see table D6 using parsimonious regressions that only include Interventions donor and Interventions recipient and their squares along with the dyad and year fixed effects. Table D7 shows the results for multi-way clustering. As compared to table 6-3, the coefficients remain identical (as they should), and mitigation aid remains strongly significant. Only adaptation aid is no more significant at conventional levels. Generally, the effect of adaptation aid appears somewhat less robust than the effect of mitigation aid, possibly due to the short time series. Lastly, a plausibility check of the contemporaneous nature of the strategic interaction between donors and recipients was carried out by running placebo regressions for different lags and leads of the aid variables (Table D8). In the full sample, none of the aid coefficients is significant. In the reduced

sample, two out of nine coefficients become significant, but small in value terms and with an unexpected sign. This leads to the understanding that these results are spurious and that overall, this exercise confirms that the strategic interaction happens within a given year.

Lastly, when differentiating between the relationship of aid and supportive statements on the one side, and aid and critical statements on the other side, some unexpected results are obtained. Table 6-4 presents the corresponding estimations for the full sample using PPML.

Tab. 6-4: Separate regressions for positive and negative statements

Dependent variables:	(1) ln(Supportive statements)	(2) ln(Supportive statements)	(3) ln(Supportive statements)	(4) ln(Critical statements)	(5) ln(Critical statements)	(6) ln(Critical statements)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Adaptation aid	Mitigation aid
ln(Aid)	0.0465***	0.1288***	0.1257***	0.0324*	0.1165***	0.0928***
	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)
Interventions recipient	0.0349***	0.0907***	0.0240***	0.0431***	0.1102***	0.0363***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Interventions recipient^2	-0.0001***	-0.0008***	-0.0001***	-0.0002***	-0.0010***	-0.0002***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Interventions donor	0.0072***	0.0276***	0.0064***	0.0090***	0.0169***	0.0093***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Interventions donor^2	-0.00001***	-0.0001***	-0.00001***	-0.00001***	-0.0001**	-0.00001***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)
Trade relationship	0.5457	0.3935	0.8761	-0.0527	-18.7236**	0.2111
	(0.72)	(0.86)	(0.54)	(0.98)	(0.03)	(0.90)
Democracy	0.0928	-0.1812	0.0829	0.0922	-0.4286	0.0775
	(0.59)	(0.64)	(0.57)	(0.62)	(0.19)	(0.66)
UN voting	1.8114***	-0.2575	0.8268	0.2424	-0.5625	-0.3392
	(0.00)	(0.76)	(0.20)	(0.66)	(0.35)	(0.58)
Vulnerability	11.0274	42.9437	13.5080	-16.7096	-24.6765	-13.8888
	(0.28)	(0.14)	(0.16)	(0.24)	(0.21)	(0.31)
ln(GDP per capita)	-2.4741***	-4.4723	-2.4997***	0.6521	5.0933*	0.4415
	(0.00)	(0.11)	(0.00)	(0.52)	(0.10)	(0.66)
Observations	15340	5120	15340	15340	5120	15340
Number of clusters	130	130	130	130	130	130
Year FE	YES	YES	YES	YES	YES	YES
Dyad FE	YES	YES	YES	YES	YES	YES

Note: Poisson pseudo-maximum likelihood (PPML) estimation used to account for censoring on the dependent variable. Clustering at recipient level. P-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

All aid coefficients are positive and significant. As shown in regressions 2 and 3 the elasticity of supportive statements with respect to both adaptation and mitigation aid is 0.13. Regarding critical statements, the elasticities for mitigation and adaptation aid are similarly high. What is even more unexpected, however, is that the sign of the coefficients is positive rather

than negative. Hence, a greater number of critical statements are associated with more, rather than less aid—quite the opposite of what the discussed theory suggests. The most plausible explanation is that we are dealing with yet another type of the short-term reverse causality. Interpreted in this way, one could imagine that donors try to appease highly critical opponents by giving them aid. If this interpretation were correct, what we observe would again reflect support buying, albeit not in the way it was postulated in the first place. Further research (outside the scope of this thesis) on this particular finding is needed.

The overall picture obtained suggests a situation in which donors use aid as an effective tool to solicit recipient support and avoid criticism in the negotiations, and/or in which recipients use support and criticism as strategies to obtain higher aid. It is not possible to distinguish between the two potential directions of the strategic interaction, but in any case, they both provide evidence for the support-buying hypothesis. Support buying may include cases in which the promise of aid is directly built into an international agreement such as the promise of the 100 billion USD in the context of the Copenhagen Accord. As expected, the effects found are much stronger and much more robust for climate aid than for general ODA. However, as opposed to initial expectations, the strategic use of mitigation aid appears to be at least as important—if not more important—than the use of adaptation aid.

6.6 Conclusion

Based on a novel dataset on member country interactions in the UNFCCC negotiations, whether aid can buy support in international negotiation processes is examined. In this context, special attention has been given to the differences in the way adaptation and mitigation aid can be used strategically

in the negotiations on account of both addressing two different types of goods – one at a local level, another at a global.

The theoretical arguments follow the reasoning in the context of UN voting where "vote buying" is an academically long-established phenomenon. While aid may also increase a donor's soft power and induce long-term positive relationships that eventually lead to closer alignment in international negotiations, the focus here is on short-term strategic interests and related, "support buying". The three-dimensional panel analysis with donor-recipient dyad fixed effects, year fixed effects and clustering at the recipient level reveals that aid can indeed buy support, but that donors tend to use climate-related aid, rather than general ODA, for this purpose. The argument is based on the fact that there is both greater demand for and greater supply of this type of financial support, whose allocation is under the direct responsibility of the delegates who are experts in a very specific field (here: international climate policy). The results reflect a significant and robust relationship between climate-related aid and negotiation support. Contrary to expectations, no evidence of greater use of adaptation aid for strategic purposes rather than mitigation aid was found. There may also be some lobbying by domestic private entrepreneurs who want make profits out of mitigation project implementation. In addition, awareness of adaptation as a climate-related aid category has only emerged in very recent years. Given that adaptation is closely related to the resilience of the local population and infrastructure—its ability to react to shocks such as heat waves, droughts or floods—it is often difficult to disentangle it from more general development aid (Buchner et l. 2011, 30; Pickering et al. 2015, 151). Also budgets for mitigation aid are larger than those for adaptation aid.

Finally, the fact that most debates in the climate change negotiations framework do not directly lead to a decision, the individual statements are taken seriously in the preparation of the final consensus—so seriously that donors are ready to pay for this, both bilaterally and as part of the common agreement being negotiated.

Appendix D

D.1 Relational Data between Parties to the UN Framework Convention on Climate Change

Extract from the codebook for dataset

D.1.1 General dataset description

This dataset contains dyadic data on how parties to the UN Framework Convention on Climate Change (UNFCCC) react to other parties' oral interventions during the negotiations. It is based on hand coding of summaries of the negotiations under the UNFCCC and covers all meetings of the official UNFCCC bodies reported in the Earth Negotiation Bulletins (ENBs) between February 1995 (11th Session of the INC in New York) and December 2013 (COP19 in Warsaw). The data covers not only the annual meetings of the Conference of the Parties (COP) to the UNFCCC, but also meetings of the permanent subsidiary bodies to the Convention (in charge of implementing its provisions and of providing scientific and technological guidance) and of ad-hoc negotiation groups established on a temporary basis to debate new agreements. It also covers meetings of specific technical workshops convened in order to inform the negotiation process.

The UNFCCC meetings are usually summarized through daily ENB reports published by the International Institute of Sustainable Development, and can be downloaded from http://www.iisd.ca/vol12/. The ENBs have been chosen as the data source since they are seen as a detailed, consistent and objective source of information by many negotiators and observers in the climate talks, and because there are no publicly available official transcripts of

the negotiations.

The dataset was created for the SNSF-funded research project *Negotiating Aid* between 2013 and 2015. The dataset contains relational data between parties to the UNFCCC, which have been obtained by coding how parties to the UNFCCC react to other parties' interventions: the observations in the dataset describe which countries speak on behalf of, support, agree with, delay, oppose, or criticize other countries' statements or positions as reported in the ENBs. The observations also contain information regarding the topic or issue area and the negotiation meeting in which the respective statement was made.

Four coders contributed to the data collection. A sample of ten ENB reports, covering the whole period from the 1990s until the 2010s was independently coded by all coders at the beginning of the process, in order to validate the codebook and ensure that the results were consistent. The findings, and eventual differences across the coders, were subsequently discussed to ensure that all have the same understanding of how to interpret the coding rules. Along the main coding process, other ENB issues at random were double-coded to ensure that coding still remained consistent over time, and to allow for testing of inter-coder reliability. Inter-coder reliability was tested using Cohen's kappa. For the main variable, coding the types of dyadic interactions between pairs of countries, Kappa between pairs of coders ranged from 0.77 to 0.98, which indicates substantial to almost perfect reliability.[14] More information about the dataset can be found in Castro (2017).

[14] Landis, J.R. and Koch, G.G. (1977). The measurement of observer agreement for categorical data. *Biometrics* 33(1): 159-174.

D.1.2 Variable description

Country 1: Country (or country group) that says something on behalf of, states something with, agrees with, supports, delays the proposal of, opposes to or criticizes *Country 2*. For the purpose of this article, only DAC recipient countries have been kept in the *Country 1* sample.

Country 2: Country (or country group) whose position or statement is being supported, agreed with, criticized, etc. by *Country 1*. For the purpose of this article, only DAC donor countries have been kept in the *Country 2* sample.
Relation: The type of reaction of *Country 1* to a statement/position by *Country 2*: speaking on behalf of, support, agreement, delaying proposal, opposition, or criticism. Detailed descriptions of the individual types of relations can be found in section D.3 below.

Conference: Place and year of meeting of the UNFCCC bodies (includes not only COP meetings, but also meetings of its subsidiary bodies).

Topic: Issue area to which the statements by *Country 1* and *Country 2* refer: Mitigation, adaptation, finance, etc. This information has not been used for this article.

Comment: Usually quotes the text that shows the coded relationship (in quotation marks). May also include comments regarding the coding.

ENB Nr: Number of the Earth Negotiation Bulletin from which the relationship was coded.

ENB_obs: Observation ID within the respective *ENB Nr*. This variable consists of the 3-digit ENB issue number followed by an observation counter within that ENB.

D.1.3 Description of coded relationships

On behalf of: when *Country 1* speaks *on behalf of* or *for Country 2*. In this case, it is clear that *Country 1* and *Country 2* (and probably together with a larger group of parties) has previously coordinated a common position, which is being presented by *Country 1* for the whole group. *On behalf of* is not coded when a member of an established coalition (such as the EU or the G77) speaks on behalf of this coalition (e.g., "Grenada, on behalf of AOSIS..." is coded simply as a statement by AOSIS). In this case, the membership of these coalitions is already fixed, and it is clear that if the coalition makes a statement, all of its members have already agreed to this position.

Example:

- "PANAMA, also speaking for Colombia, Chile, Mexico, Guatemala, Peru, Uruguay and the Dominican Republic, stressed the importance of making progress on REDD (...)" (ENB No. 462).

Support: is used when the text explicitly says that *Country 2* (or its statement) was supported by *Country 1*, even when this support is expressed in different sentences.

Example:

- "He (the EU) said additional effort should be made to reduce uncertainty in GWPs but that parties should use them if they wish. Japan supported the GWP position (...). Australia (...) also supported continued use of GWPs." (ENB No. 2).

Agreement: when several countries are reported to hold the same position on an issue. This may be a text like "several parties, including Country 1, Country 2 and Country 3, proposed ...". Agreement may be coded also when two different sentences refer to the same position being held by different countries, even though the relationship (agreeing with each other) is not explicitly written.

Example:

- "The EU, the US and CANADA stressed the need to ensure consistency with the capacity building aspects of other discussions on technology transfer and adaptation." (ENB No. 145).

Delaying proposal: when *Country 1* proposes that *Country 2*'s idea or proposal be discussed at a later time.

Examples:

- "The EU recognized Kazakhstan's aspiration to join Annex B, while highlighting the need to comply with legal requirements relating to Annex B amendments. She supported deferring the issue to COP/MOP 6." (ENB No. 452).
- "TOGO, supported by MALAYSIA, proposed adjourning until numbers were proposed" (ENB No. 74).

Opposition: when the text reports *Country 1* opposing the statement or position expressed by *Country 2*. This has also been coded when the word "opposition" is not explicitly mentioned, but it is clear from the statements that they oppose each other.

Examples:

- "The G-77/CHINA supported this approach while the US, CANADA and JAPAN opposed it" (ENB No. 347).

- "MEXICO underscored its commitment to mechanisms and processes that increase the participation of observers. (...) NIGERIA noted that although participation of stakeholders has been positive, the UNFCCC is an intergovernmental process." (ENB No. 489).

Criticism: when *Country 1* directly criticizes *Country 2* or its position / statement.

Examples:

- "He [the EU] said some developed countries, particularly the US, have not included binding measures in their proposals and emphasized the EU's conviction that P&Ms should be included to fully encompass the Berlin Mandate and Geneva Declaration." (ENB No. 42).

"The MALDIVES lamented that reliance on the phrase "form should follow function" [used by China] is slowing down the negotiations" (ENB No. 494).

D.2 Descriptive statistics of supportive and opposing statements by recipients towards donors

Table D1: Types of interactions between donors and recipients

Interaction	No. of statements	Percentage of total
Supportive	*1711*	*54.18*
Agreement	1586	50.22
Support	88	2.79
On behalf of	37	1.17
Opposing	*1447*	*45.82*
Opposition	1423	45.06
Criticism	24	0.76

Table D2: Ten most active aid recipients

Recipient	No. of statements	Percentage of total
Saudi Arabia	313	9.91
China	304	9.63
Brazil	280	8.87
India	206	6.52
South Africa	123	3.89
Tuvalu	115	3.64
Colombia	113	3.58
Bolivia	111	3.51
Mexico	89	2.82
Argentina	88	2.79

Table D3: Ten most supportive aid recipients

Recipient	No. of supportive statements	Total No. of statements	Supportive statements as % of country's statements
Costa Rica	53	53	1.00
Kazakhstan	19	19	1.00
Samoa	14	14	1.00
Papua New Guinea	39	41	0.95
Guyana	15	16	0.94
Chile	58	62	0.94
Uruguay	14	15	0.93
Mexico	82	89	0.92
Indonesia	37	41	0.90
Panama	22	25	0.88

Note: Table based only on recipients with 10 or more interactions (54 out of 97 actively speaking recipients in dataset)

Table D4: Ten least supportive aid recipients

Recipient	No. of supportive statements	Total No. of statements	Supportive statements as % of country's statements
Oman	1	24	0.04
Sudan	1	16	0.06
Nicaragua	1	12	0.08
Libya	1	10	0.10
Jamaica	2	12	0.17
Algeria	7	35	0.20
Venezuela	15	73	0.21
Zambia	3	13	0.23
Bolivia	33	111	0.30
Cuba	11	35	0.31

Note: Table based only on recipients with 10 or more interactions (54 out of 97 actively speaking recipients in dataset)

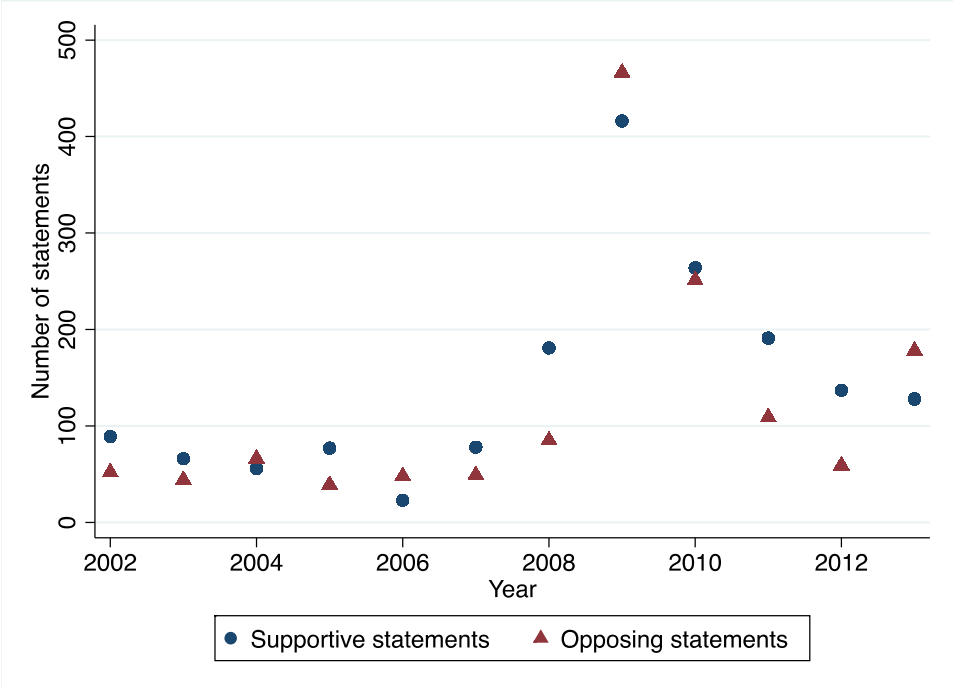

Figure D1: Evolution of supportive and opposing statements over time

Table D5: Variable Description and Data Source

Variable	Definition	Observations	Mean	Std. Dev.	Min	Max	Source
Dependent variables							
Support index	Sum of statements a recipient makes referring to a specific donor, by year, whereby each statement is weighted by the degree of support, from -3 (criticism) to +3 (support or speaking on behalf). In most regressions, we use a logged version of this variable. As it includes negative numbers (-18 being the lowest), we add 19 before taking logs.	20860	0.036	1.065	-18	20	Own coding from IISD (2000-2013).
Unweighted support index	Unweighted sum of supportive and opposing statements a recipient makes referring to a specific donor, by year. In most regressions, we use a logged version of this variable. As it includes negative numbers (-9 being the lowest), we add 10 before taking logs.	20860	0.015	0.520	-9	10	Own coding from IISD (2000-2013).
Supportive statements	(Unweighted) sum of positive statements where a recipient agrees with, speaks on behalf of or supports a donor, by year. In some regressions, we use a logged version of this variable. Before creating the log, +1 was added to avoid zeroes.	20860	0.096	0.469	0	12	Own coding from IISD (2000-2013).
Critical statements	(Unweighted) sum of negative statements where a recipient delays, opposes or criticizes a donor, by year. In some regressions, we use a logged version of this variable. Before creating the log, +1 was added to avoid zeroes.	20860	0.080	0.520	0	15	Own coding from IISD (2000-2013).
Main explanatory variables							
Total aid	Bilateral ODA commitments made by donors to recipients (2014 constant prices, USD millions). In most regressions, we use a logged version of this variable. Before creating the log, we rescale it into US dollars and add +1 to avoid the zeroes.	20860	54.851	259.594	0	11534.75	OECD (2016b)
Total aid dummy	Indicator for whether any bilateral ODA commitment was made by the respective donor to the respective recipient (1) or not (0), by year.	20860	0.692	0.462	0	1	OECD (2016b)
Adaptation aid	Climate change related bilateral ODA commitments for adaptation (both as main and significant purpose; 2014 constant prices, USD millions). In most regressions, we use a logged version of this variable. Before	5960	1.086	14.564	0	744.583	OECD (2016a)

Variable	Definition	Observations	Mean	Std. Dev.	Min	Max	Source
	creating the log, we rescale it into US dollars and add +1 to avoid the zeroes.						
Adaptation aid dummy	Indicator for whether any bilateral ODA commitment for adaptation was made by the respective donor to the respective recipient (1) or not (0), by year.	5960	0.057	0.232	0	1	OECD (2016a)
Mitigation aid	Climate change related bilateral ODA commitments for mitigation of greenhouse gases (both as main and significant purpose; 2014 constant prices, USD millions). In most regressions, we use a logged version of this variable. Before creating the log, we rescale it into US dollars and add +1 to avoid the zeroes.	17880	2.063	41.238	0	2625.284	OECD (2016a)
Mitigation aid dummy	Indicator for whether any bilateral ODA commitment for mitigation was made by the respective donor to the respective recipient (1) or not (0), by year.	17880	0.040	0.195	0	1	OECD (2016a)
Control variables							
Interventions donor	Overall number of oral interventions made by a donor during the UNFCCC negotiations, by year. In most regressions we use a squared version of this variable.	20860	59.043	66.442	0	407	own coding from IISD (2000-2013)
Interventions recipient	Overall number of oral interventions made by a recipient during the UNFCCC negotiations, by year. In most regressions we use a squared version of this variable.	20860	3.737	11.744	0	188	own coding from IISD (2000-2013)
Dyadic interventions	Total number of positional statements made by a recipient referring to a specific donor, by year. In most regressions we use a squared version of this variable.	20860	0.176	0.843	0	27	own coding from IISD (2000-2013)
Trade relationship	The value of dyadic trade between the donor and the recipient (imports + exports, in constant 2011 USD) as a fraction of the recipient's GDP.	19540	0.063	0.791	0	63.84	United Nations (2016)
Imports	Bilateral imports by the donor from the recipient (millions constant 2011 USD). We use a logged version of this variable, in which we rescale it to US dollars and add +1 before taking logs to avoid losing the zeroes.	20860	1570.892	13604.07	0	444389.6	United Nations (2016)
Exports	Bilateral exports from the donor to the recipient (millions constant 2011 USD). We use a logged version of this variable, in which we rescale it to US dollars and add +1 before taking logs to avoid losing	20860	1059.594	7356.925	0	218822.8	United Nations (2016)

Variable	Definition	Observations	Mean	Std. Dev.	Min	Max	Source
	the zeroes.						
Democracy	Absolute difference between the donor's and the recipient's level of democracy, measured as the average between the Freedom House civil liberties and the Freedom House political rights indices (rescaled so that higher values mean higher civil liberties or political rights).	20220	2.761	1.805	0	6	Freedom House (2015), obtained from QoG (2015)
UN voting	Voting similarity index (0-1) equal to (total number of votes where both states agree)/(total number of joint votes). It includes all votes and not only important votes.	19485	0.717	0.218	0	1	Voeten (2013)
Vulnerability	Recipient vulnerability measured by the ND-GAIN index that captures a country's exposure, sensitivity and ability to adapt to the negative impact of climate change.	16560	-0.023	0.169	-0.989	0.174	ND-ECI (2015)
GDP per capita	GDP per capita (constant 2011 USD) of the recipient countries. We use a logged version of this variable.	19340	8142.559	8235.965	492.607	48963.45	World Bank (2016)

Table D6: Buying support at the UNFCCC, parsimonious model

Dependent variable: ln(Support index)	(1)	(2)	(3)	(4)	(5)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Mitigation aid
ln(Aid)	0.0000	0.0024**	0.0033***	-0.0004	0.0039***
	(0.85)	(0.03)	(0.00)	(0.11)	(0.00)
Interventions recipient	0.0003	0.0032***	-0.0004	0.0036***	0.0030***
	(0.66)	(0.00)	(0.53)	(0.00)	(0.00)
Interventions recipient^2	-0.00002***	-0.0001***	-0.00001***	-0.0001***	-0.0001***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Interventions donor	-0.0001	0.0001	-0.0001	0.0001	0.0001
	(0.29)	(0.32)	(0.27)	(0.33)	(0.28)
Interventions donor^2	0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.88)	(0.43)	(0.38)	(0.62)	(0.34)
Observations	20860	5960	17880	5960	5960
Number of clusters	149	149	149	149	149
Year FE	YES	YES	YES	YES	YES
Dyad FE	YES	YES	YES	YES	YES
Adj. within R-squared	0.084	0.079	0.101	0.070	0.095

Note: Clustering at recipient level. P-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table D7: Regressions with multi-way clustering

Dependent variable: ln(Support index)	(1)	(2)	(3)	(4)	(5)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Mitigation aid
ln(Aid)	0.0001	0.0026	0.0033***	-0.0003	0.0042***
	(0.70)	(0.15)	(0.00)	(0.14)	(0.01)
Interventions recipient	-0.0001	0.0030**	-0.0006	0.0035**	0.0026**
	(0.93)	(0.02)	(0.44)	(0.02)	(0.02)
Interventions recipient^2	-0.00001*	-0.0001***	-0.00001*	-0.0001**	-0.0001***
	(0.06)	(0.01)	(0.09)	(0.03)	(0.00)
Interventions donor	-0.0001	0.0001	-0.0001	0.0001	0.0001
	(0.26)	(0.56)	(0.27)	(0.51)	(0.60)
Interventions donor^2	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.81)	(0.61)	(0.53)	(0.76)	(0.54)
Trade relationship	0.0021	0.0050	0.0026	0.0043	0.0046
	(0.73)	(0.50)	(0.68)	(0.53)	(0.51)
Democracy	-0.0003	0.0013	-0.0002	0.0008	0.0012
	(0.83)	(0.70)	(0.88)	(0.81)	(0.72)
UN voting	0.0192**	-0.0033	0.0157**	-0.0056	-0.0055
	(0.02)	(0.85)	(0.05)	(0.78)	(0.75)
Vulnerability	0.2445	0.5252	0.2550	0.5277	0.5440
	(0.13)	(0.29)	(0.11)	(0.27)	(0.27)
ln(GDP per capita)	-0.0367*	-0.0548	-0.0392*	-0.0544	-0.0561
	(0.06)	(0.23)	(0.05)	(0.22)	(0.22)
Observations	15330	5110	15330	5110	5110
Number of clusters (recipients)	129	129	129	129	129
Number of clusters (donors)	10	10	10	10	10
Year FE	YES	YES	YES	YES	YES
Dyad FE	YES	YES	YES	YES	YES
Adj. within R-squared	0.095	0.081	0.108	0.071	0.100

Note: Clustering at recipient and donor level. P-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table D8: Main results of regressions with lags and leads of aid

Dependent variable: ln(Support index)	(1)	(2)	(3)	(4)	(5)
Variables for Aid:	Total aid	Adaptation aid	Mitigation aid	Total aid	Mitigation aid
ln(Aid), 1-year lag	-0.0000	-0.0009	0.0000	-0.0005**	-0.0000
	(0.78)	(0.28)	(0.93)	(0.05)	(0.93)
Observations	15330	3800	14090	5110	5110
Number of clusters	129	127	129	129	129
ln(Aid), 2-year lag	0.0002	0.0001	0.0000	-0.0003	-0.0006
	(0.21)	(0.89)	(0.91)	(0.21)	(0.36)
Observations	15330	2520	12830	5110	5110
Number of clusters	129	126	129	129	129
ln(Aid), 1-year lead	0.0002	-0.0011	-0.0004	-0.0001	-0.0015*
	(0.33)	(0.12)	(0.54)	(0.71)	(0.08)
Observations	14070	5140	14070	3850	3850
Number of clusters	129	129	129	129	129

Note: Table shows results for the main explanatory variable (aid) in separate regressions using different lags and leads. The effect of control variables (same set as those shown in Table 1) is not reported. All regressions with year and dyad fixed effects, and clustering at recipient level. P-values in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Chapter 7

Conclusion

This dissertation brings to the forefront the need for a conceptual rethinking of climate aid allocation. Over the years, several debates ranging from how to define climate aid, to ensuring that it is truly additional to what donors are providing anyway as development aid has been discussed in the literature. However, so far, none of the studies have incorporated the consideration that within climate aid, mitigation aid addresses a global public good while adaptation aid, a local public good. This consideration ultimately has important implications for how climate aid should be allocated as well as for its strategic use within the international climate negotiations.

Chapter 2 presented an empirical overview of the relevance of climate aid and a discussion on the climate finance architecture. Then it clarified the conceptual underpinnings of the word *climate aid* and the problems associated with this instrument of dealing with climate change. It elaborated more on the theoretical issue of addressing the global public good, mitigation and a local public good, adaptation with the same instrument. This chapter explained the importance of having separate criteria for allocating mitigation aid and adaptation aid. Since the latter is a global public good, it does not matter where the greenhouse emission reductions take place. The effect of one ton of greenhouse gas emission will be the same irrespective of whether it takes place in a rich country like Switzerland or a poor country like Mali. By definition, no country can be excluded from reaping the benefits of such mitigation. Therefore, an efficient donor should choose a location, which maximizes the amount of emission reductions at given cost to allocate their mitigation aid.

Since poverty is negatively correlated with emissions, efficient mitigation locations often happen to be emerging economies rather than poor countries. Adaptation aid, however, is needed mainly by poor, vulnerable countries which are more affected by the onslaught of climate change and do not have sufficient resources to deal with it. In other words, aid for mitigation and adaptation should target different locations in order to be efficiently spent.

In chapter 3, the empirical question relating to whether donors are aware of the separate criteria for mitigation and adaptation was explored. Furthermore, this chapter shed light on if donors do have separate criteria, whether they face certain impediments that reduce their efficiency in allocation of such climate aid. Using semi-structured expert interviews and secondary sources, the findings of this chapter revealed that most bilateral donors did not have publicly available criteria for mitigation aid allocation. Those which did have, focused either on efficiency in terms of greenhouse gases reduced at given cost or effectiveness measured by the amount of greenhouse gases reduced or avoided annually. However, despite having established efficiency criteria for mitigation aid, proper allocation of mitigation aid can be hampered for various reasons. This chapter identified such reasons and tried to understand to what extent they led to reduction in allocation efficiency. The most important factors that were identified included conflicts between different ministries, donors' own strategic priorities in terms of promoting their business interests and leveraging climate finance as well as their choice of partner countries. In addition, public expectations also influenced donors' aid allocation.

Identification of the donors was not possible in this analysis, since the interviewed donors' requested to be anonymous. More importantly, it was necessary to investigate whether donors who claim to use the cost-effectiveness

criteria to choose where to allocate mitigation aid, actually use it and whether there are differences in the drivers of adaptation and mitigation aid. Therefore, in the next two chapters, a quantitative analysis of the donors' climate aid allocation decisions has been carried out.

Chapter 4 and 5 adopted a quantitative approach to understand the determinants of climate aid allocation. This approach allowed the comparison with the information gathered from the interviews in the previous chapter.

Chapter 4 used panel data with variation over recipient and year dimensions to model whether the determinants of mitigation and adaptation aid were indeed different. In other words, did mitigation aid target more efficient mitigation locations and adaptation aid, poor countries? An important issue, not considered so far within the aid allocation literature was that if donors target places with high mitigation potential they would have to allocate their aid to emerging economies. Therefore, donors' efficiency may be misinterpreted as being selfish, i.e. donors are considered to be allocating mitigation aid to emerging economies for selfish reasons specifically with respect to donor exports (which are positively correlated to the criteria of efficient mitigation). To prevent such a misinterpretation, it was necessary to introduce controls for efficient location of mitigation aid. The misunderstanding is based on an omitted variable bias that disappears when variables accounting for mitigation efficiency are included in the model. In conclusion, the overall analysis revealed that donors do not differentiate between these two types of climate aid, i.e. mitigation aid and adaptation aid leading to lower efficiency in allocation. The quantitative findings largely conform to those from the previous chapter, where it was revealed that donors despite being aware of the efficiency criteria for mitigation aid were often

prevented from allocating their aid efficiently owing to barriers emanating from their own economies.

Chapter 5 presented a more fine-grained econometric analysis for individual donors. The previous chapter showed that overall; donors have not yet adjusted their climate aid allocation to efficient allocation. But in that analysis, donors were aggregated which could have hidden more nuanced information regarding each donor. It was possible that some donors are more efficient than the rest. Moreover, when these donors are efficient, as discussed in the previous chapter, they will be considered to be selfish in the current framework of the aid allocation literature. To be able to assess the efficiency of individual donors, each donor's allocation decisions were scrutinized using a three dimensional panel with an added donor dimension and seemingly unrelated regressions revealing which donor was misinterpreted as being selfish and which ones, simply careless in their allocation.

To be able to assess the efficiency of individual donors a three-dimensional panel analysis with the donor dimension was conducted. An interaction term with the export term (reflecting donors' selfish interests) and dummies for each donor was introduced in the models estimating mitigation aid allocation with and without controlling for mitigation efficiency. Using seemingly unrelated regressions, Wald tests on the interaction term revealed whether donors are misinterpreted or simply careless. Donors were labeled as misinterpreted if the Wald tests revealed that the interaction term is significantly different from zero and the difference between the interaction terms before and after controlling for mitigation efficiency is positive, careless otherwise.

In chapter 6 of the thesis, the strategic role of climate aid in the

international climate negotiations at the United Nations Framework Convention on Climate Change (UNFCCC) was studied. Again, given the separate roles of adaptation aid, which addresses problems at a local level while mitigation aid, at a global level, led to the expectation that each type of aid is used differently in the negotiations. The latter may be less appropriate as a reward since each recipient will only enjoy a small part of the benefits. The underlying motivation of studying the multilateral setting of the UN negotiations is that financial incentives offered to developing countries can be used as a means to solicit the support (or thwart criticisms) of developing countries in the negotiations. Therefore, this chapter assessed whether countries that receive climate aid from donors react by expressing increased support and/or reduced opposition towards the donors. The study used linear regressions on a three-dimensional panel dataset with donor-recipient dyads that allows us to differentiate between long-term partnerships and the strategic use of aid for the purpose of the negotiations. The results indicate that indeed, countries that get any aid from donors tend to support them more in the negotiations. Moreover, aid can be used to buy support in the climate negotiations, but that this opportunity tends to be limited to mitigation and adaptation aid, rather than general aid. This argument is justified on the basis that there are greater demand and supply of these specific forms of climate aid and the responsibility for its allocation is with the delegates participating in the climate negotiations. Surprisingly, the study also finds that aid is used to buy support of the countries and also prevent criticism. This finding calls for further research.

This thesis offers two important insights. Firstly, chapter 4 and 5 point towards an important but relevant issue: there are no homogeneous controls for the efficient location of projects for global public goods like climate change mitigation. Aid for global public goods does not follow the logic of the

traditional aid allocation literature. One could argue that as a consequence, the aid allocation literature should simply become more disaggregated. However, one might also ask whether financing global public goods should at all be accounted for as aid (see also Kaul 2014). Aid was initially conceived as a contribution that should benefit a specific recipient, not the world as a whole. If aid focuses on the provision of global public goods, apart from certain co-benefits, recipients should also have only very limited incentives to accept such aid. There are some global public goods that are more efficiently provided in developed rather than in developing countries. Will their provision be accounted for as development aid when they are (ineffectively) produced in developing countries instead? Should the definition of development aid perhaps rather depend on who benefits most than on where the project is implemented? Or should the funding for global public goods generally not be considered as aid, but come out of a separate budget (as widely requested for climate finance, notably by developing countries)? These questions highlight the challenges that arise for the statistical registration of development assistance at the level of the OECD/DAC. Meeting these challenges in an appropriate way will represent an important contribution to donor accountability and the effective allocation of finance in the age of global public goods. Secondly, the relevance of the study conducted in chapter 6 extends beyond the context of the UNFCCC. The analogy between aid and negotiation support on the one hand, and aid and UNGA or UNSC voting alignment on the other hand shows that the strategic use of aid goes beyond what has been established in the aid literature so far. This should not only hold for the UNFCCC, but also for other similar international negotiations such as in the realm of the World Trade Organization. This analysis also feeds into the broader debate on donor motivations for foreign aid. In this context, the results suggest yet another component of donor interest beyond the commercial and geopolitical interests considered in the aid allocation literature

so far.

The contributions of the research work undertaken have implications beyond the climate change regime. Firstly, it analyses the determinants of climate aid allocation in light of the global public goods consideration. Overlooking this aspect might lead to misinterpretation of donor motives and points out the inherent theoretical as well as methodological weaknesses in the current development finance allocation literature. This has consequences not only for climate aid but also for any type of development assistance addressing global public goods. Secondly, the while the role of aid has been studied in the context of UN voting, no study to the best of my knowledge, has studied the role of climate aid in the international climate negotiations, where decisions are not taken on the basis of voting but rather on the basis of consensus of all countries.

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